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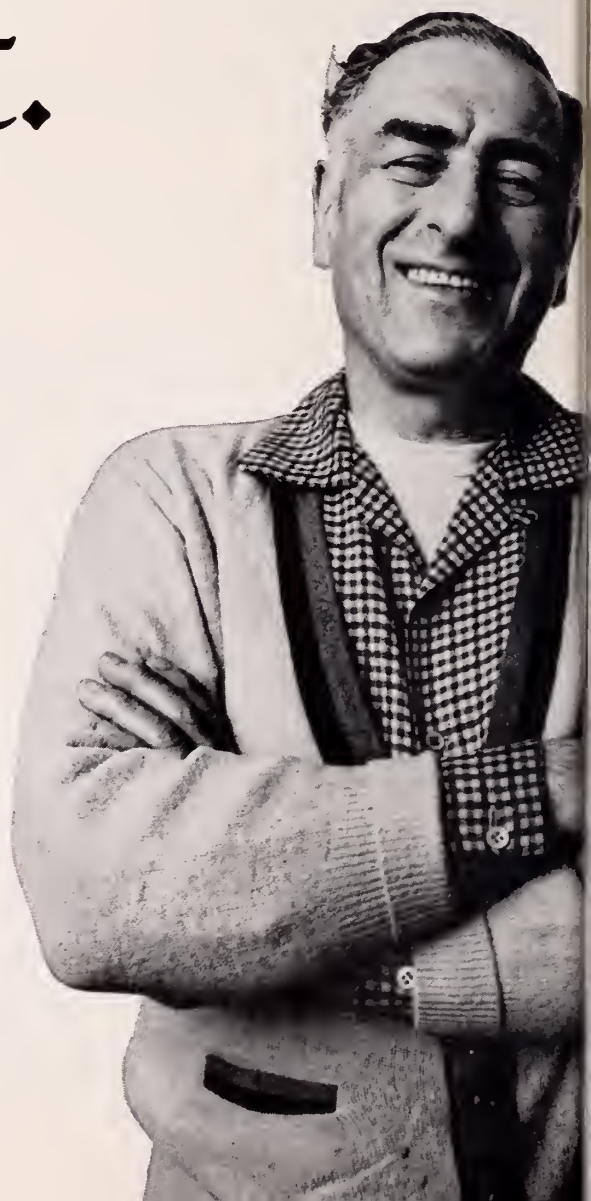
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# The Journal of the Maine Medical Association

Volume Sixty-two

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Number 1

## Acute Drug Intoxication

### Hemodialysis as an Adjunct to Therapy

TIMOTHY D. CARNES, M.D.\*

The current concepts of treatment of patients in coma secondary to drug overdosage is somewhat controversial. Some investigators advocate simply "supportive care," i.e., maintaining of ventilation and blood pressure, fluid balance, gastric lavage, and intensive nursing care.<sup>4,6</sup> The use of hemodialysis and peritoneal dialysis has been studied extensively,<sup>2,3,11,12</sup> yet its use in the comatose drug overdose patient has been limited. It is the purpose of this brief article to propose a few guidelines for the treatment of patients suffering from overdosage of some of the more common sedative drugs. Specific mention is made of some atypical drugs and some non-sedative drugs frequently seen as overdoses. It is hoped that this may clear up some of the controversy surrounding the use of dialysis, especially hemodialysis, in addition to supportive therapy in the treatment of these patients.

Barbiturate intoxication has been more thoroughly studied than most of the other types of drug overdoses as barbiturates continue to be the most commonly used agent in depressed or suicidal individuals.<sup>1</sup> In considering the many other sedative or tranquilizing medications often encountered in drug intoxication, these can, for the most part, be included in the discussion of barbiturates. The overall clinical assessment of the patient with barbiturate intoxication is perhaps best summarized by Reed's stages for depth of coma (See Table 1). In addition to this, a detailed history of the type, amount, and time elapsed from ingestion of the specific drug is extremely beneficial but, unfortunately, oftentimes unavailable. Blood levels of the ingested drug is another parameter which is helpful in assessing the situation.

Initial management of patients in coma secondary to drug ingestion comes under the heading of supportive

care. This includes a number of routine measures and, depending upon the depth of coma, some more intensive modes of therapy. Routinely, all patients in Stage 1 or deeper coma should have a cuffed naso-tracheal tube in place with assistance in respiration as indicated. Next, gastric lavage with saline via an NG tube, placement of indwelling urethral catheters, administration of intravenous fluids and diuretics, plus intensive supportive nursing care as is found in intensive care units.<sup>1,4,5,6</sup>

The problem of deciding when supportive care alone is inadequate and when more intensive measures such as dialysis are indicated is perhaps the most important consideration in the management of these patients. In general, there are several criteria, as proposed by Schreiner, which indicates the need for dialysis in barbiturate and other depressant drug intoxications:

1. Progressive deepening of anesthesia or deterioration of the clinical state (severe hypopnea, areflexia, shock, or cyanosis).
2. Known ingestion of potentially fatal dose, i.e., greater than 3 grams for short-acting barbiturates - Greater than 5 grams for long-acting barbiturates.
3. Blood barbiturate level in potentially fatal range, i.e., 3.5 mgs. per 100 ml's for short-acting barbiturates - 8.0 mgs. per 100 ml's for long-acting barbiturates.
4. Development of severe complications, e.g., hyperpyrexia, aspiration pneumonia, or co-existence of medical conditions which increase the hazards of a prolonged coma.<sup>12</sup>

When any one of the above conditions is present, then dialysis is the treatment of choice.<sup>12,5</sup> Compared to other methods of increasing the removal rate of the barbiturates from the body, hemodialysis removes them 10 to 30 times faster, the long-acting barbiturates (Phenobarbital, Veronal and Mebaral) being cleared more rapidly than the short-acting ones (Nembutal® and Seconal®).<sup>11</sup> Peri-

\*Resident in Internal Medicine (Assigned to Nephrology Unit), Maine Medical Center, Portland, Maine 04102.

TABLE 1  
Currently Known Dialyzable Poisons<sup>11</sup>

Barbiturates*	Alcohols	Metals	Miscellaneous Substances
Barbital	Ethanol*	Arsenic	Thiocyanate*
Phenobarbital	Methanol*	Copper	Aniline
Amobarbital	Isopropanol	Calcium	Sodium chlorate
Pentobarbital	Ethylene glycol	Iron	Potassium chlorate
Butobarbital		Lead	Eucalyptus oil
Secobarbital	Analgesics	Lithium	Boric acid
Cyclobarbital	Acetylsalicylic acid*	Magnesium	Potassium dichromate
	Methylsalicylate	Mercury	Chromic acid
Glutethimide*	Acetophenetidin	Potassium	Digoxin
	Dextropropoxyphene	Sodium	Sodium citrate
Depressants, Sedatives and Tranquilizers	Paracetamol	Strontium	Dinitro-ortho-cresol
Diphenylhydantoin	Antibiotics	Halides	Amanita Phalloides
Primidone	Streptomycin	Bromide*	Carbon tetrachloride
Meprobamate	Kanamycin	Chloride*	Ergotamine
Ethchlorvynal*	Neomycin	Iodide	Cyclophosphamide
Ethinamate	Vancomycin	Fluoride	5-Fluorouracil
Methypyrrolon	Penicillin		Methotrexate
Diphenhydramine	Ampicillin	Endogenous Toxins	Camphor
Mathaqualone	Sulfonamides	Ammonia	Trichloroethylene
Heroin	Cephalin	Uric acid*	Carbon monoxide
Gallamine triethiodide	Cephaloridine	Tritium*	Chlorpropamide
Paraldehyde	Chloramphenicol	Bilirubin	
Chloral hydrate	Tetracycline	Lactic acid	
Chlordiazepoxide	Nitrofurantoin	Schizophrenia	
	Polymyxin	Myasthenia gravis	
Antidepressants	Isoniazid	Porphyria	
Amphetamine	Cycloserine	Cystine	
Methamphetamine	Quinine	Endotoxin	
Tricyclic secondary amines		Hyperosmolar state*	
Tricyclic tertiary amines		Water intoxication	
Monoamine oxidase inhibitors			
Tranylcypromine			
Pargyline			
Phenelzine			
Isocarboxazid			

\*Kinetics of dialysis thoroughly studied and/or clinical experience extensive

toneal dialysis has been shown to remove barbiturates  $\frac{1}{4}$  to  $\frac{1}{2}$  as well as hemodialysis.<sup>3</sup> Other sedative, tranquilizing, and anti-depressant intoxications commonly seen in Emergency Wards are due to a myriad of agents. A list of these products currently known to be suitable for treatment with hemodialysis is found on Table 2.<sup>11</sup> These materials meet the following criteria outlined by Schreiner which make hemodialysis an effective means of managing intoxications with these agents:

1. The molecule can diffuse through a cuprophane membrane from plasma water and has reasonable removal rate.
2. It is sufficiently well-distributed in accessible body fluid compartments. This restriction is diminished if a "loculated" substance is in diffusion or chemical equilibrium with a significant moiety in the plasma water.
3. That there is a relationship between toxicity and the blood concentration and duration of the body's exposure to this circulating substance.
4. That the amount of the agent dialyzed constitutes a significant addition to the normal body mechanisms

for dealing with the particular substance under consideration.<sup>12</sup>

Certain agents deserve a brief additional comment. Glutethimide (Doriden®) differs from most of the compounds listed on Table 2 in that its solubility ratio of fat to water is approximately 100:1. Also, Doriden "has an internal recirculation via biliary secretion and absorption which may result in prolonged toxicity with cyclic changes in the clinical state of the patient.<sup>1,9,11</sup>" Various criteria for hemodialysis have been worked out and include:

1. A history establishing the dose ingested as 10 grams or more.
2. A blood glutethimide level of 3.0 mg.% or higher.<sup>9</sup>

Because of the cyclical changes of the level of consciousness, the values of the blood level and the amount ingested are extremely important as clinical assessment of the patient's condition does not frequently correlate with the severity of the intoxication.<sup>9</sup>

Of the many tranquilizing agents on the market, the phenothiazines (Thorazine®, Sparine®), Valium® and Librium® have become some of the more common agents



TABLE 2

*Stages of Coma According to Reed, et. al.<sup>16</sup>*

CLASS O:	Asleep, but can be aroused and can answer questions.
CLASS I:	Comatose, will withdraw from painful stimuli, reflexes intact.
CLASS II:	Comatose, will not withdraw from painful stimuli, reflexes intact.
CLASS III:	Comatose, reflexes absent, no depression of respiration or of circulation.
CLASS IV:	Comatose, reflexes absent, respiratory depression or circulatory failure or both.

and are oftentimes implicated in drug overdosage. The importance of this fact is that none of these agents is cleared significantly by hemodialysis.<sup>11</sup> This fact is an important one to remember but should not be a major factor in eliminating a patient for consideration for dialysis since these agents are oftentimes used in addition to some dialyzable poisons, and dialysis may be beneficial to the patient.<sup>5</sup>

Ingestion of aspirin is another common problem seen in drug overdosage. The complexity of this problem is reviewed in the literature.<sup>8,12,13</sup> Suffice it to say that indications for dialysis in ASA ingestion as set forth by Schreiner are:

1. Greater than 20 grams ingested.
2. Greater than 50 mgs.% blood level.
3. Increasing CNS signs.
4. Significant prothrombin time alteration.<sup>12</sup>

Medical treatment includes administration of bicarbonate to increase ionic trapping of the salicylate molecule. Administration of potassium and fluids is equally important. Development of metabolic acidosis requires intravenous bicarbonate with titration of the patient's status with blood gas analysis.<sup>12</sup>

Amphetamines have come to be one of the main forms of drug abuse in the United States. Its use in addicts by intravenous administration is well known, and that tolerance builds rapidly is equally clear. When large doses of amphetamines are used, the patient may present in a prolonged semi-comatose state.<sup>11,14</sup> Although recovery of the drug from the dialysate fluid is small, hemodialysis has been reported to improve the clinical state of the patient with amphetamine overdose.<sup>11</sup>

#### COMMENT

Despite the controversy surrounding the treatment of sedative drug overdosage, it is our feeling that if a few guidelines are followed, then the treatment is quite clear cut.

1. Intensive supportive care in all cases. Analeptics (PicROTOXIN, Ritalin® and Metrazol®) should not be used as they have not been shown to significantly shorten the length of coma, but have been implicated in many complications including tachycardias, arrhythmias, seizures, etc. (The use of vasopressor

agents is not indicated unless the patient is being dialyzed since falling blood pressure is an indication for dialysis.)

2. Observation of the clinical status of the patient in conjunction with the history of the drug ingested and monitoring of blood levels in light of suggested indications for hemodialysis.
3. Since hemodialysis is advanced to the point where the hazards of the procedure itself are at a minimum, (e.g., priming with blood is no longer necessary, many sophisticated monitoring systems are readily available, etc.), then this single mode of therapy should be high on the list for patients meeting the proposed criteria.
4. Relative contraindications for hemodialysis should be weighed against possible benefits (e.g., contraindications include active peptic ulcer disease, recent surgery — within 2 days — severe hypertension).

In conclusion, the general management of patients in coma secondary to drug overdose involves intensive supportive care, and in more severe cases, the use of peritoneal or hemodialysis. Some authorities feel that the less that is done, the better; however, among the most common causes for morbidity and mortality among these patients are respiratory compromise, usually aspiration pneumonia, plus urinary tract infection. These are oftentimes directly related to the duration of coma.<sup>11</sup> Since the duration of coma often approaches 3 days or more with merely supportive care, then dialysis, especially hemodialysis, can play a significant role in shortening the duration of coma, hence reducing the complications.

In our experience with more than 100 comatose patients with drug overdose over the past 10 years who have met the criteria for hemodialysis, we have had no deaths and relatively few complications.<sup>15</sup> As Schreiner states: "In the unusual cases of massive ingestion, it (hemodialysis) may offer the only chance for survival."<sup>12</sup>

#### ACKNOWLEDGEMENT

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# A Practical Value for Whole Blood $pK'$ at Various $pH$ 's\*

WILLIAM H. AUSTIN, M.D.\*\*

## INTRODUCTION

Studies with tonometered plasma and blood indicate that the  $pK'$  varies with  $pH$ .<sup>1,2,3</sup> In all cases, the variation of  $pK'$  with  $pH$  is approximately the same (i.e.,  $pK' = -.03$  to  $-.05$ ), over a wide range of  $pH$ . These studies have remained standards for several years although the values were derived from a relatively small number of samples. Recent studies<sup>4,5,6,7</sup> indicate the  $pK'$  is unaffected by protein abnormalities, water content, viscosity, fibrinogen, or the severity of the disease process, but the effect of  $pH$  on  $pK'$  was not specifically evaluated in the clinical range in patients.

The present study intends to systematically evaluate<sup>8</sup> the value, distribution, and variation of  $pK'$  with  $pH$  in 65 samples of blood. For practical reasons, the  $pH$ 's studied include values from approximately 7.0 to 7.7. Although this report does not exclude the likelihood of a variation throughout a wide  $pH$  span, it does point out that  $pK'$  is apparently constant through the clinical range.

## METHODS

Sixty-five blood samples were obtained by venepuncture for  $pK'$  determination. Most of the individuals studied were acutely ill with medical or surgical diseases. Less than ten had minimal disorders or were normal. Tonometry was performed for 20 minutes with an Instrumentation Laboratory Tonometer at  $37^\circ C \pm .1^\circ$ . The gases were calibrated with a Haldane apparatus to an accuracy of  $\pm 0.03\%$ . Six determinations were made on each cylinder. From the percent of carbon dioxide in the tank, a  $PCO_2$  value was calculated using the barometric pressure and the water vapor tension (i.e.,  $PCO_2 = \% CO_2 \times (BP - 47)$ ).  $pH$  measurements were performed with an Orion 801 digital  $pH$  meter. The measuring system consisted of a Metrohm capillary electrode with a Radiometer reference unit, both maintained at  $37^\circ C$ . This system was found to be highly accurate and is the subject of a previous communication.<sup>9</sup> The  $pH$  electrode was standardized with NBS buffers (obtained from the National Bureau of Standards, U.S. Department of Commerce, Washington, D.C. 20234) with assigned values of 7.383 and 6.839 at  $37^\circ C$ . They were prepared at intervals of two to three weeks. The electromotive force to  $pH$  ratio was adjusted so that the buffers agreed to within .002 to .003  $pH$  units of their specified values. The electrode was standardized between each measurement with the

7.383 buffer, then thoroughly rinsed with saline. A minimum of 3 determinations was performed and values accepted when readings agreed within .003. No correction was made for plasma  $pH$ . The  $CO_2$  content of plasma, separated anerobically, was determined in duplicate by the manometric method of Van Slyke.<sup>10</sup> An "operational"  $pK'$  was determined using the  $pH$ ,  $PCO_2$  of the equilibrating gas at  $37^\circ C$ , and the  $CO_2$  content of the plasma. A solubility factor of 0.0307 ( $CO_2$  (mmoles/liter)/ $PCO_2$  (mmHg)) at  $37^\circ C$  was used.<sup>11</sup> In practice, the  $pK'$  was calculated according to the modified Henderson-Hasselbalch equation as follows:  $pK' = pH - \log (CO_2 \text{ Content}/PCO_2 \cdot S - 1)$ ; where  $S$  is the solubility factor.

## RESULTS

The resultant  $pH$ 's ranged from 7.05 to 7.65 and  $pK'$ 's from 6.073 to 6.124. It appears that for practical considerations, the distribution of  $pK'$  is linear with respect to the  $pH$ . A linear regression equation was calculated and may be expressed by  $pK' = 6.13 - .0042 \times pH \pm .01$ , indicating an insignificant variation of  $pK'$  with  $pH$ .

## DISCUSSION

Most of the previous work<sup>1,2,3</sup> relating  $pK'$  to  $pH$  has been done on plasma or blood tonometered with different concentration of carbon dioxide. Severinghaus<sup>1</sup> used human and dog plasma and determined the  $CO_2$  content by the Van Slyke manometric method. Samples from the same source were used at different levels of  $PCO_2$ . A review of the data shows that two human subjects, a dog, and a pooled specimen of serum accounted for all of the 25 tonometered samples studied at  $37.5^\circ C$ .

Siggard-Anderson<sup>2</sup> determined  $pK'$  in plasma with  $pH$ 's from 7.0 to 7.5. It appears that approximately 20 measurements were made; however, it is not clear if the same or different samples were used for these studies. The bicarbonate concentrations were derived by titration. Four sets of values were obtained and a line fitted through the mean of each set. The degree of variation was assessed by the standard deviation of the mean at each point from approximately 7.0 to 7.5. The variation presented in this fashion is narrower than the standard deviation itself.

Thornton and Nunn<sup>3</sup> tonometered samples of whole blood; however, only 12 determinations were used in the study. In general, the results tended to parallel those of Severinghaus. These experiments comprise the bulk of the evidence for the variation of  $pK'$  to  $pH$ . Although our information does not shed any light on the overall variation of  $pK'$  with  $pH$ , it does indicate that in the range commonly seen in clinical medicine, the use of  $pK'$  corrected for  $pH$  does not add to the accuracy of a calculated third variable, be it  $PCO_2$ ,  $HCO_3^-$ , or  $CO_2$  content.

\*From: The Division of Nephrology and Research, Maine Medical Center, 22 Bramhall Street, Portland, Maine 04102.

\*\* Assistant Professor of Medicine, Tufts University. Clinical Director of Nephrology, Maine Medical Center. Research Associate, Maine Medical Center.

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Although the application of 95% confidence limits for  $pK'$  to our data may not be strictly appropriate because of the small sample size at high and low pH values, it does suggest that the use of two standard deviations ( $\pm .02$ ) is sufficient to embrace the variation of  $pK'$  with pH normally reported in the literature and in this study. We do not doubt that  $pK'$  appears to vary with pH; however, the possible advantage of using a "corrected"  $pK'$  in clinical range does not seem to be justified, and the use of  $pK'$  of 6.10 seems more than satisfactory.

#### SUMMARY

The variation of  $pK'$  with pH, and possibly other factors, does not appear significant. A pH of 6.10 may be used with confidence in the calculation of a third variable be it  $PCO_2$ ,  $HCO_3^-$ , or  $CO_2$  content.

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# Lead Poisoning Survey - Portland, Maine

July-August, 1970

ALAN J. CLARK\* and GEORGE W. HALLETT, M.D.\*\*

The frequency of childhood lead poisoning in large urban centers of the United States has been well documented.<sup>1,2</sup> However, except for a possible rare exception, no study has been performed on a predominantly white population, in a city of under 100,000. Accordingly, a lead poisoning screening study was undertaken in Portland, Maine during the months of July and August, 1970. Funding for the execution of the project was provided by a grant from Portland's Model Cities Program, and much of the chemical determination costs were underwritten by the Public Health Laboratory in Augusta, Maine. Organization of the project, and collection of urine and blood samples, was carried out by a third year medical student from Yale University, with the assistance of two Health Aides. The program was under the direction of the Pediatric Department of the Maine Medical Center, with the advice of some of the medical faculty at Yale University School of Medicine.

Census studies from a 1968 Portland survey indicated an estimated 1200 children from 1 to 6 years of age living in the Model Cities area. Several factors led to the supposition that there would be a fairly high incidence of lead poisoning: (1) several cases of lead encephalopathy had been observed in recent years. (2) most of the housing was pre-World War II, and much of it dilapidated, and (3) this section of the peninsula had the largest segment of population which could be considered economically and culturally deprived.

Several methods of urine lead screening have been developed in recent years,<sup>3,4</sup> each with its individual virtues and flaws. Previous work in other cities<sup>5</sup> had shown the Delta Aminolevulinic ("ALA") Test to be both reasonably accurate and practical, and, for a variety of reasons, this method was chosen. Urine collections were made in 20 cc glass bottles containing tartaric acid. The sample was collected by parents, preferably at midday, and promptly refrigerated. After pickup by the Health Aides, refrigeration was again instituted until shipment had been arranged by bus to the State Laboratory. Preliminary publicity was aided by radio, newspaper, and distribution of pamphlets on a district basis just prior to solicitation. Every house in the Model Cities area was visited at least once, and, in general, parental cooperation was good. Supplemental collections (including 53 duplicate samples) were obtained from Head Start and Day Care Centers.

ALA testing by the Connecticut State Laboratory Tech-

nique,<sup>4</sup> using hand packed columns, and blood lead levels, were carried out by the Public Health Laboratories in Augusta, under the direction of Dr. Charles Okey. Blood lead determinations were carried out on all children who had 0.054 mgm% ALA or higher in their urine, or on children with negative ALA's, but an ALA positive sibling. Originally, 12 blood leads were performed by both the Dithizone Technique and by Atomic Absorption Spectrography.<sup>6</sup> As excellent correlative values were found, the simpler Atomic Absorption method was selected.

A total of 905 urines were ALA tested, 670 from the Model Cities area (53 of which were duplicates), and 235 from Portland areas outside of Model Cities, or from South Portland. Eighty-nine children had either a trace or strongly positive ALA (over 0.054 mgm%), and all of these children subsequently had blood lead levels performed. In addition, 17 ALA negative siblings of this group were also tested for blood lead, making a total of 106 in all.

Fourteen children were found to have blood lead levels in excess of 0.060 mgm%. Only one child had a level in excess of 0.084 mgm%, and in this case the blood lead was 0.112 mgm%. After thorough examinations, the decision was made to hospitalize and treat 6 of these 14 children. All children came from homes receiving income supplement from Aid For Dependent Children; all had a history of pica; one had lead flakes by abdominal x-ray; all except one came from very poorly maintained homes; 5 of the 6 had hematocrits below 35; and 4 of the 6 had lead lines on x-rays. The remaining 8 included 3 with lead lines, but, because of variable factors, they were not actively treated. The 6 children who were given therapy were basically asymptomatic, but were considered at definite risk. They were hospitalized for 7 days, and given calcium EDTA 60 mgm/KG/day intramuscularly, in q8h divided doses (mixed with some procaine). As no facilities for new or improved housing were available to this group upon discharge, a vigorous educational campaign was carried out for the parents by both physicians and Public Health Nurses. Both professions are maintaining close supervision of the involved families by follow-up blood lead examinations, by home visits, and by future clinic re-appointments.

The remaining 92 children were arbitrarily subdivided into three general groups: Group A, with blood lead levels between 0.045-0.060 mgm%; Group B between 0.035-0.044 mgm%; and Group C with lead levels below 0.035 mgm%. Group A was given careful home appraisals, histories, physical examinations, CBC's, urinalyses, and x-rays of wrists and knees. Of the 25 children in this

\*Yale University School of Medicine (M.D. 1972).

\*\*Chief of Pediatrics, Maine Medical Center, Portland, Maine 04102.

group, 13 had hematocrits below 35, 3 had lead lines by x-ray, most children came from homes at risk, and most had pica. Group B, which comprised 29 children, underwent Public Health visits and hematocrits, (12 were below 35), but did not have x-rays taken, nor did they have complete histories and physicals performed. Group C had no examinations of any kind, although it is planned to do follow-up blood leads on some of these children, as will be done on Groups A and B. No children with levels below 0.060 mgm% were given specific therapy, but strong educational and surveillance measures were instituted, along with continuing efforts to improve housing conditions felt to be at risk. Cooperation of various groups was sought, including the Portland Public Health Department, Maine State Department of Health and Welfare, Model Cities Health Task Force and Housing Task Force, the Pine Tree Legal Assistance Society, and voluntary help from interested lawyers and laymen. Continuing efforts at public education were planned with the assistance of the Model Cities Health Task Force, Portland West Health Council, and Radio Station WCSH.

As a sidelight of the study, several interesting points evolved:

1. Although in many instances, actual ALA testing was carried out up to 29 days after collection, acidification, and refrigeration, there appeared to be no decomposition of ALA under these conditions.
2. Although 14 children had negative ALA's and positive blood leads, in none of these cases did the blood level exceed 0.060 mgm%.
3. A very close correlation was demonstrable between the incidence of positive ALA's (approximately 10%) in Portland's Model Cities area and in central urban areas of major U.S. cities. Similar correlation (approximately 4%) was observed with elevated blood leads.

Future plans call for continuing educational efforts, enactment and enforcement of regulations regarding deteriorated housing with lead paint, pressures for new housing, and, of course, close follow-up on children found at risk. Discussions are underway with the Maine Department of Health and Welfare regarding further screening of children (in the 1-6 year age group). Cri-

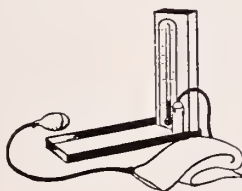
teria for testing will probably include the following pertinent "risk profile":

1. Housing – pre World War II, deteriorated.
2. Pica – especially for paint.
3. Anemia – iron deficiency, or unexplained.
4. Behavioral change – aggressiveness, irritability, lethargy, etc.
5. Maternal – passive, dependent type of mother overwhelmed by a large number of children.
6. Abdominal pain – crampy, recurrent.
7. Environmental – sibling or neighborhood at known risk.

If more than one of these criteria is satisfied, depending on the individual case, it is hoped that physicians, Public Health Nurses, or even parents themselves, will seek lead poisoning screening. It is also anticipated that local, State, or Federal funds will be forthcoming to permit free testing for those unable to bear the screening costs. Needless to say, considering the economics of the profile of the group at risk, this would include almost all involved families. It is further hoped that this study will stimulate additional surveys in some of Maine's small cities, and particularly in rural areas. For a comparative-ly small expenditure of funds, the rewards are high.

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# Amniotomy

## Its Role in Normal Labor

RUDOLF G. WINKELBAUER, M.D.

The amniotomy is a very simple obstetrical procedure. This brief report is intended for the reading of the practitioner with limited experience, for he will come to appreciate amniotomy as a most dependable and effective procedure, carried out to expedite the progress of labor – provided it is done with consideration for proper timing. Its improper use, if attention to detail is not met, can lead to a complexity of misfortunes in labor.

To illustrate the clinical use and misuse, three fictitious cases are presented.

### CASE NO. 1

A primigravida has been in very slow and exhausting labor. Pelvic capacity is adequate, as verified by x-ray pelvimetry. The fetus is of average size and is in cephalic presentation. The cervix is 6 cm dilated after 18 hours of labor with the membranes intact. The contractions are regular and long, but ineffective. The patient is discouraged, fatigued and dehydrated. Consultation is obtained. During the examination, the consultant purposely ruptures the membranes. One hour later the head is on the perineum and uneventful delivery follows.

### DISCUSSION

If amniotomy had been done earlier by the attending physician, possibly with a 3-4 cm cervical dilation, the length of labor would have been shortened substantially. Presumably, some term uteri have difficulty contracting effectively, that is, showing progressive dilatation, because the markedly distended uterus (a very large bag of thinned-out muscle) is unable to contract properly. Once the amniotic fluid has drained off, however, the uterus usually decreases in size enough to allow for a better performance of its muscular tissue and good progress follows. I find it interesting that the escape of even small amounts of amniotic fluid (the draining away of the forewater – the amniotic fluid below the fetal head) will effect this progress, a change which may be brought on by more than one development. The proper filling of the lower uterine segment with the well-descended fetal head acts as a stimulus in the mechanism of effective labor. There are at least two anatomical discernible changes which follow the amniotomy – subtle changes, mind you, but clinically important ones: decrease in uterine size, leading to more myometrial strength; and, equally important, the settling of the fetal head into the funnel-shaped lower uterine segment.

The overdistended uterus in labor, with feeble attempts to contract the extremely thinned-out muscle wall, brings to mind as comparison the overdistended urinary bladder. Such a bladder also is unable to effectively contract its detrusor mechanism until some drainage has taken place. Here, the flow of urine, initially a dribble,

can serve to illustrate the point. When the bladder has begun to empty, the flow of urine accelerates at an increasingly rapid rate. The uterus can likewise exhibit the strain of overdistention. Given the relief of amniotomy, it recovers its contractile ability and cervical dilatation can progress.

### CASE NO. 2

This patient is a multipara, at term, in early labor. The head is dipped into the pelvic inlet, the cervix is 2-3 cm dilated with membranes intact. Because of the problem of too much to do, and too little time, you decide to rupture the membranes. Forty-five minutes later the nurse informs you that the cord has prolapsed.

### DISCUSSION

This probably would not have happened had you followed certain rules of safety. It is needless to say that prolapse of the cord will never be eliminated completely as a complication of labor, but its incidence can be kept low. The need for emergency Cesarean section and the high percentage of fetal loss make it a highly unfortunate complication since the patient suddenly is confronted with the possibility of fetal loss the very moment she must consent to emergency surgery on herself. Such a sudden complication may be difficult for the patient to accept in stride because there has been no forewarning. Hasty preparation make the patient naturally even more apprehensive.

The cause of prolapse of the cord can be significantly lessened by adhering to the following rules:

Cardinal rule number one: do not rupture the membranes electively unless the fetal head is well fixed in the pelvic inlet – actually obstructing the pelvic inlet.

Secondly and equally important: the patient must be made to remain in proper semi-sitting position after amniotomy. Imagine, if you will, a small drinking glass (the bony pelvis) containing a hen's egg (the fetal head). Now lay the glass on its side. The egg may roll out of the glass. In the same manner, a fetal head that is not well engaged can slide out of the pelvic inlet, if the patient is allowed to lie flat on her back or, even worse, if she is permitted to raise her hips while getting on a bedpan, etc. Such minor slip-ups can lead to disastrous courses in labor. I advise that you explain to the patient beforehand, the need for maintaining a semi-sitting position during and after amniotomy. The nursing personnel in attendance should also have the benefit of this explanation – each time. A woman in labor may be presented with several situations which would automatically require her to elevate her hips (bedpan, towel, pads, etc.); therefore

repetitive explanations and warnings are in order, and very necessary.

Should the fetal head, after amniotomy, show a definite trend to move upward in the birth canal with possible resultant disengagement, then the physician should at once grasp the fetal head between thumb and index finger and with gentle downward pressure, hold the fetal head in the pelvic canal long enough to await strong uterine contractions. With these, the fetal head will progress further down into the pelvis and will prevent cord prolapse. The holding of the fetal head in position may require a great deal of patience on the part of the physician and he may have to remain at the bedside for the better part of an hour. Intravenous Pitocin® drip may also be necessary, should the contractions be only short and irregular.

We should be particularly wary not to rupture the membranes in a patient in whom the fetal head has not dipped well into the pelvic inlet. In this case, initial examination of the fetal head can elicit side-to-side balloting. This would speak for unengagement and constitutes a dangerously loose fit with a much higher incidence of cord prolapse. Evaluation one hour later may find complete engagement of the head and a situation entirely safe for amniotomy. Frequent evaluation of the patient makes the proper timing of this procedure self evident.

#### CASE NO. 3

A young gravida 2, para 1, at term, in early active labor presents herself with intact membranes. The fetal head is fixed in the pelvis and the station is minus one. Is amniotomy in this situation considered meddlesome obstetrics? Is it justified, should it even be considered?

#### DISCUSSION

After having observed my share of women in labor, I have come to the conclusion that amniotomy is an enormously important adjunct in the management of uncomplicated obstetrics. The inherent danger (prolapsed cord, amnionitis) is exceedingly small, if safety rules are not overlooked. On the other hand, the beneficial influence it primarily has on the progress of labor should be measured in terms of shorter hours of labor and fewer of contractions — a real service to the unborn when we remember that every uterine contraction is a short but pronounced episode of hypoxia which the fetus endures. Were it not for the astounding tolerance to the temporary lack of oxygen, the process of labor would surely spare no unborn child from certain brain injury. And once the physician has convinced himself through his own observations at the bedside that this procedure is dependable and safe, then only few of his patients will eventually

go through labor without artificial rupture of the membranes. He will try to elect the earliest possible moment for amniotomy consistent with safety.

I do believe that any patient who has ruptured membranes, spontaneous or artificially, must be more closely observed. Aside from cord prolapse, there are two other clinical entities which deserve some comment: uterine inertia and amnionitis. In both situations, conscientious nursing care is paramount for the early detection of these complications.

Uterine inertia can manifest itself before or after rupture of the membranes. Certainly, the development after amniotomy is not the result of this procedure but it nevertheless must be viewed with more concern. Because, in this case, time is so important, early diagnosis is good practice. Early initiation of uterine stimulation with I.V. pit drip usually brings the desired progress.

Amnionitis, a secondary complication after membrane rupture or amniotomy, is generally not a problem unless many hours have elapsed. It is a definite threat to the fetus and to a lesser degree, a threat also to the mother. Early symptoms usually are vaginal odor and a low-grade fever. Again, close observation, early recognition and prompt initiation of treatment is indicated. The clock begins to tick, let us remember, the moment the amniotic fluid begins to drain. If we keep this in mind and insist on the best nursing care, treatment of early inertia carries a far better outlook than any treatment of advanced inertia. The same goes for amnionitis. We simply cannot afford to let hours elapse between one evaluation and the next. Largely, the outcome hinges on the quality of the nursing care and it is up to us to tell our OB nurse what to look for and how often.

There are two questions which I have asked myself — virtually with every patient in the labor room.

1. If the head is well engaged and the patient is in early active labor with a well effaced and partially dilated cervix, can labor be shortened by rupture of the membranes?

2. Should I therefore make a definite effort to perform the amniotomy, early in labor as soon as the criteria for its safety have been met?

For quite some time now, I have been convinced that both questions should be answered affirmatively. Although amniotomy is not stressed in the academic teaching of obstetrics, the practical merits, in my opinion, deserve more than our casual attention. And, once the attending physician has recognized this, he will want to utilize this procedure in a large number of his patients.

# Paramedical Personnel Questionnaire

## Results of 1970 Study

GEORGE W. HALLETT, M.D.\*

In the spring of 1970, the Paramedical Subcommittee of the Maine Medical Association Priorities' Committee undertook a survey of its members to determine their individual opinions regarding the usage of new forms of allied health personnel. A total of 950 forms were mailed out, and 470 replies were received over the course of the next six months. In addition to checking the "Yes" and "No" boxes, almost a third of the respondents made comments, many of which were very extensive. The responses are summarized below:

<u>Question</u>	<u>"No" or blank answers</u>	<u>"Yes" answers</u>
1. Do you think non-physicians can be trained to perform any of the following, UNDER SUPERVISION?		
a. History (preliminary)	61	409
b. Physical (portions)	146	324
c. Lab work	13	457
Physicians responded that they considered allied health personnel could be trained to be most useful in history-taking and lab work, less so in making portions of the physical exam. Five made no response at all to Question (1); only two gave "no" answers to all three parts of it.		
2. To what extent do you now use paramedical personnel?		
a. Not at all	141	
b. Assisting with		
History		141
Physical		68
Lab work		251
Other		131
		<hr/> 591
Many physicians already make use of some type of personnel, often using them in more than one capacity. A similarity in response exists between Question (1) and (2), in that physicians believed paramedical personnel could be trained equally well for preliminary history or lab work, and to a lesser degree for portions of the physicals. "Other" areas in which paramedical personnel are now used included: rounds, suture removal, dressing changes, records, physiotherapy, shots, emergency room screening of patients, O.R. technician, nurse anesthetist.		
3. Is there an area in your practice where you might employ paramedical per- sonnel, if available?	156	314
Ninety-two of these physicians who do not now use paramedical personnel (Question 2) would not employ them. Sixty-four do not, but might use them if they were available.		
4. If "Yes," what area?		
a. Adult Multiphasic Screening		141
b. Well Baby and Child Care		89
c. Uncomplicated Delivery		65
d. Technical Surgical Care (lacerations, I&D, etc.)		74
e. Other (describe)		134
		<hr/> 503

\*Chairman, Paramedical Subcommittee and Chief of Pediatrics, Maine Medical Center, Portland, Maine 04102.



When "Other" is described, it is usually a function related to the physician's specialty. For example:

- Radiologist – Assistance with fluoroscopy.
- Orthopedic Surgeon – Cast work, traction adjustments.
- Dermatologist – Skin testing.
- Psychiatrist – Psychological testing.
- Obstetrician – Prenatal training classes and care, observation of patients in labor.
- Pathologist – Morgue, autopsy room, animal laboratory.

5. What qualifications should be attained BEFORE the formal training period?	
a. High school	96
b. Two-year college	52
c. Four-year college	29
d. Registered nurse	34
(14 physicians checked both four-year and RN, the highest educational level)	
e. Other (describe)‡	211

‡Quite a number of physicians specified that the willingness, intelligence and motivation of the assistant were more to be considered than formal training. In one instance, foreign medical students were suggested. Medical corpsmen were also suggested by a few physicians.

Numbers in the "Yes" column indicate only a single level was checked. A few physicians listed all four types of schooling (a,b,c,d) and many listed two or more. Often different levels of training were specified for the levels of responsibilities to be delegated.

Other types of training indicated were LPN, x-ray or laboratory technician course graduates, social workers, trade school graduates.

6. Please CIRCLE appropriate type of practice:	
a. Private or Salaried	
b. Solo, Partnership or Group	
c. General Practice or Specialty (indicate type)	
d. Urban, Suburban or Rural	
Only 169 physicians completed all four parts of question (6) correctly, so that probably no correlations can be made between types of practice and expressed attitudes or needs.	

7. Any comments?	
One hundred and twenty-seven respondents made comments, evaluation of which would indicate the following approximate distribution:	
In favor of increasing training and usage of paramedical personnel	89
Against	20
Mixed feelings	18

In very general terms, the result of this study would seem to indicate that the majority of the members of the Maine Medical Association are in favor of using paramedical personnel to a far greater extent than they are doing at present. Only 141 members are using such personnel to assist with history taking, but 409 are in favor of it. Only 68 are receiving help with physical examinations, but 324 are in favor. If personnel were available, a total of 314 respondents would employ them. Even assuming that all non-respondents were opposed to the concept and use of such personnel, this means that approximately one-third of the total membership of the Maine Medical Association is ready and willing to employ allied health personnel if only they were available.

The mandate seems clear. The next problems are to find the personnel and facilities for training, and, most essential, the funds to pay for it.

# Maine Heart Association Notes



20 Winter Street, Augusta, Maine

## Cardiomyopathies

MORTON KORN, M.D.\*

Cardiomyopathies are a group of disorders in which there is progressive deterioration of myocardial function without significant coronary artery disease, systemic arterial hypertension, rheumatic valvulitis, or infectious endocarditis. This group contains some of the least well understood diseases which involve the heart.

The myocardial diseases are usually divided into two classifications: 1.) The idiopathic cardiomyopathies, and 2.) The secondary cardiomyopathies. The latter group is made up of systemic diseases which involve the heart as part of a recognized disease process, such as scleroderma, amyloidosis, sarcoidosis, systemic lupus, Friedreich's ataxia, progressive muscular dystrophy, myotonia atrophica, hemochromatosis, and glycogen storage disease to name a few.

The idiopathic cardiomyopathies comprise an ill-defined group of poorly classified diseases, some of which are familial. The non-familial group is composed of alcoholic cardiomyopathy, post-partum cardiomyopathy, hypertrophic subaortic stenosis and idiopathic cardiac hypertrophy. In the bulk of patients with idiopathic cardiomyopathy, the etiology is obscure.

The patient with cardiomyopathy will often present with either the symptoms of his underlying disease (in secondary cardiomyopathies) or with angina, syncope or congestive heart failure. On occasion the asymptomatic patient is detected because chest x-ray reveals an unexplained large heart or routine electrocardiogram reveals an unexpected conduction disturbance or other QRS-T abnormality. The basic differential diagnosis must always include coronary artery disease and rheumatic heart disease. Patients with cardiomyopathy and marked cardiomegaly frequently have the murmur of mitral insufficiency; the differentiation between primary valvular disease and primary myocardial disease resulting in valvular deformity is sometimes difficult. It is most advisable that cardiac catheterization and coronary arteriography be carried out in all patients suspected of cardiomyopathy, since coronary artery

disease may present without chest pain. Thus, the patient who appears to have cardiomegaly and congestive heart failure due to cardiomyopathy, may actually have severe coronary artery disease (with or without ventricular aneurysm) and may be a candidate for surgical therapy.

The treatment of patients with cardiomyopathy is directed toward relief of the symptoms of the underlying disease and toward management of the congestive heart failure. Relief of left ventricular outflow tract obstruction, if present, is indicated. The heart failure in this group of patients is frequently severe and difficult to control. Digitalis, diuretics and a salt free diet remain the mainstays of therapy. Patients with cardiomyopathy frequently accumulate extraordinary amounts of edema fluid and the temptation to produce rapid diuresis in the newly discovered patient may lead to large potassium losses and digitalis intoxication.

Three areas of therapy are controversial and require special consideration. There is some evidence to suggest that prolonged bedrest with severely restricted activity is of value. Secondly, steroid therapy is often advocated in the use of cardiomyopathy. Lastly, anticoagulation has been recommended as sound preventive therapy for people with primary myocardial disease. The rationale underlying the recommendations for anticoagulation stems from the frequency of pulmonary and systemic embolism in these patients.

In summary, the primary myocardial diseases present a broad array of pathologic processes directly involving the myocardium. A small number of patients with this disorder are affected with a systemic disease which, also involves the heart. The greater number are affected by an idiopathic form of cardiomyopathy. Most patients in whom this diagnosis is entertained should undergo cardiac catheterization to rule out the possibility of a specifically treatable form of heart disease. In the absence of specific therapy, digitalis, diuretics and salt restriction remain the most useful forms of treatment of the heart failure, which invariably accompanies these disorders at sometime in their course. There is no convincing evidence at this time that prolonged bedrest, steroids, or anticoagulants alter the course of these diseases.

\*Chief, Section of Clinical Cardiology, Division of Cardiology, Mount Sinai Hospital of Greater Miami.  
Prepared by the Maine Heart Association for this Journal.



## Necrology

EUGENE P. WOLFART, M.D.

1923-1970

Dr. Eugene P. Wolfahrt, 47, chief of surgery at the Webber Hospital, died on November 19 at his home in Saco after a short illness.

Dr. Wolfahrt was born in West Orange, New Jersey on June 20, 1923, son of Rudolph P. and Grace L. Wolfahrt.

He was graduated from Columbia University in 1944 and received his medical degree from the University of Pennsylvania School of Medicine in 1946. Dr. Wolfahrt interned and served a residency at the Presbyterian Hospital in Philadelphia. He served in the U. S. Air Force as Captain from 1951 to 1953 and then located in Saco.

Dr. Wolfahrt was a member of the York County Medical Society, the Maine Medical Association, the American Medical Association, and was a diplomat of the American Board of Surgery. He was also a strong supporter of local athletics and had served as team physician for St. Louis High football teams more than ten years.

Surviving are his wife, Mrs. Betty S. Wolfahrt; two sons, Dean and Kurt, three daughters, the Misses Kim, Shelley and Ereica, all of Saco; his mother of Tom's River, New Jersey and a sister, Mrs. Charles Hiller of Lincroft, New Jersey.

## County Society Notes

### OXFORD

The regular fall meeting of the Oxford County Medical Society was held at Bethel Inn, Bethel, Maine on October 7, 1970.

The meeting was called to order by the President, Dr. Warren C. Hazelton. The Secretary-Treasurer read the minutes of the previous meeting which was held on May 18, 1970. These were approved without correction. The President appointed Drs. Alcide F. Dumais, H. Richard Bean and Norman M. Jackson to serve as the nominating committee. They brought the following slate of new officers for 1971 before the Society:

President, Peter B. Aucoin, M.D., Rumford

Vice-President, John R. Fenger, M.D., Norway

Secretary-Treasurer, Stephen B. Dewing, M.D., Norway

Delegates to the M.M.A. House of Delegates: Drs. John R. Fenger, Norway (1 yr.) and Linwood M. Rowe, Rumford (2 yrs.) Alternates: Drs. Walter G. Dixon, Norway (1 yr.) and Alfred Oestrich, Rumford (2 yrs.)

Councilors, Drs. H. Richard Bean, Norway (1 yr.), Albert P. Royal, Jr. (2 yrs.) and John B. Makin, Jr. (3 yrs.), both of Rumford

The county society felt that the wording of the rules and regulations should be changed so that the term "Medical Doctor" would refer to any physician in good standing.

A treasury report revealed \$207.03.

A social hour and dinner followed the meeting. Because of Dr. Herrick's unexpected illness, the education program for the evening did not take place and the meeting came to an end at 9:00 p.m.

HAGOP HALLADJIAN, M.D., *Secretary*

### WASHINGTON

A combined meeting of the Washington and Hancock County Medical Societies was held at the Red Barn, Milbridge, Maine on October 14, 1970 with twenty-five members and guests present. A social hour preceded the regular meeting.

The business meeting was chaired by Dr. Randall H. Silver of Ellsworth, President of Hancock County Medical Society. Dr. James C. Bates of Eastport, Councilor for the Fifth District, brought the Societies up to date regarding the last Council meeting. Dr. Bates stated that he was a member of a committee to visit the State Hospitals. The Bangor State Hospital had in-

formed him that they would not take any cases in coma or those with unreduced fractures or lacerations that were not sutured.

The question of reorganization of the Maine Medical Association was also brought up by Dr. Bates. Dr. Robert G. MacBride of Lubec, a member of the reorganization committee, thought that it would be best if we had two or three combined meetings yearly, and carried on our usual county business separately until we found whether combining the two Societies would be successful. At present, both counties are meeting regularly and are having very successful meetings. He felt that we should not upset this present arrangement until we had had sufficient time to work out other plans.

The main business of the meeting consisted of a re-study of the proposal for a Maternal and Infant Care Program for Washington and Hancock Counties. There was much discussion by many members present of the various aspects of the program. A motion was finally made by Dr. Eliot T. Stadler of Gouldsboro, and seconded by Dr. John C. Van Pelt of Ellsworth, that we send delegates from both county societies to talk to representatives of the Department of Health and Welfare from Washington and from Augusta. The meeting is to be in Boston, Massachusetts with the so-called Dr. Robertson's M.I.C. proposal as a basis for negotiations. This motion was passed. Drs. Donald M. Robertson and George B. Shaw would represent Washington County at this meeting; Drs. Bradley E. Brownlow and Randall H. Silver would represent Hancock County.

Dr. Marguerite C. Dunham, acting director of the Division of Child Health from Augusta, spoke relative to her feelings about the M.I.C. Program and general health topics.

Dr. Peter J. Leadley, Director of Health for the State of Maine, spoke also about the M.I.C. Program. He felt that there were some aspects of it, particularly in regard to fees, that would have to be ironed out. Generally, he felt the program was quite satisfactory and he felt that the Department of Health and Welfare would cooperate fully with the physicians to facilitate the carrying out of this program.

A regular meeting of the Washington County Medical Society was held on November 23, 1970 at the Peabody Memorial Library, Eastport, Maine. Six members were present. The meeting was presided over by Dr. G. Bernard Shaw of Machias, Maine, President of the Society.

The main purpose of the meeting was to discuss the Maternal and Infant Care Program that Dr. Shaw and Dr. Donald M. Robertson of Milbridge had attended in Boston, Massachusetts as representatives of the Washington County Medical Society. At that conference, they presented general proposals for a Maternal and Infant Care Program for Hancock and Washington Counties. The proposal was not acceptable in many parts to the representatives from the government. The Society voted that we table this prospectus until we receive a proposal from the Health and Welfare as to their requirements.

Dr. Robert G. MacBride and Dr. Donald M. Robertson had attended a meeting of the MEDEX Group at Dartmouth Medical College, Hanover, New Hampshire. It is hoped that one or two of the trainees could be brought to Washington County to work with physicians. There was also some discussion as to the Bennett Plan. The general feeling was that the plan in its present set up would not be workable.

Dr. Shaw was appointed the representative from the Washington County Medical Society to work with the Young Lawyers section "Drug Abuse Program" of the American Bar Association.

KARL V. LARSON, M.D., *Secretary*

### HANCOCK

The 427th meeting of the Hancock County Medical Society met at the Red Barn Restaurant, Milbridge, Maine on October 14, 1970, with nine members present. This was a combined meeting with the Washington County Medical Society for the purpose of discussing the proposed M.I.C. Program submitted by Dr. Donald M. Robertson of Milbridge. There was a discussion of the proposal resulting in a motion for the adoption of the proposal as a basis for negotiation with representatives from the State Department of Health and Welfare and representatives of the Children's Bureau at a meeting in Boston, October 20. Delegates Brownlow and Silver were to accompany Drs. Robertson and Shaw to the October 20th meeting.

The 428th meeting of the Hancock County Medical Society was held at the Brookside Restaurant in Ellsworth, Maine on November 11, 1970, with thirteen members and three guests present. Dr. Robert H. Brown, an orthopedist from Bangor, discussed "The Frozen Shoulder, Its Origin and Treatment" in a succinct and informative manner. Appreciation of the membership was shown by an active question and comment period which followed.

The business meeting included the announcement of the House of Delegates' meeting of the Maine Medical Association in December with items of the Maine Medical Association reorganization and peer review mentioned for discussion. A report of the M.I.C. conference October 20th in Boston was discussed. A working arrangement was sent for future writing of the program for M.I.C. The concluding item of business was the appointment of a Nominating Committee for officers to be presented at the December annual meeting.

BRADLEY E. BROWNLOW, M.D., *Secretary*

### WALDO

The October 16, 1970 meeting of the Waldo County Medical Society was convened by the President, Dr. Norman E. Cobb.

The minutes of the April meeting were read and approved. There was no old business.

Drs. Harold Knuuti and Theodore Raia were elected unanimously to membership in the Waldo County Medical Society.

A motion was made and passed to instruct our M.M.A. Delegate to the A.M.A. of our desire to have the A.M.A. endeavor actively to inform the public of the *good* things in medicine in order to counteract the bad reports in the national news media.

The activities of the M.M.A. Subcommittee on Peer Review were discussed. The group would be receptive to specific suggestions from the Subcommittee when these should be forthcoming.

The secretary was appointed to compare fee schedules in Waldo County with those elsewhere in Maine. Meeting adjourned at 6:00 p.m.

EUCLID M. HANBURY, JR., M.D., *Secretary*

### KENNEBEC

The Kennebec County Medical Association met on October 15, 1970 at the Augusta House, Augusta, Maine. Following the social hour, dinner was served to forty-five members and guests.

The business meeting was called to order by the President, Dr. George I. Gould. The minutes of the last meeting were read and accepted. The following candidates were elected to membership: Dr. Patrick J. M. Ryan, Gardiner; Drs. John W. Towne, Tatsuo Watanabe and William H. Diehl, all of Waterville.

A resolution on the death of Dr. Peter F. Lansing was presented by Dr. Robert L. Ohler and passed by unanimous vote.

Following the business meeting, the evening scientific program was presented by James F. Patterson, M.D., Professor of Medicine, Tufts Medical School and Chief, Gastroenterology Service, New England Center Hospital. Dr. Patterson gave a complete and fascinating discussion of the diagnosis and treatment of inflammatory bowel disease, with special emphasis on recent advances in the fields of ulcerative colitis and granulomatous enteritis. A stimulating discussion period followed, after which the meeting was adjourned by Dr. Gould at 9:30 p.m.

FRANCIS A. SPELLMAN, M.D., *Secretary*

### LINCOLN-SAGADAHOC

The regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on October 20, 1970.

The meeting was called to order by Vice-President, Dr. Frank O. Avantaggio, Jr. at 8:45 p.m. Vice-President Avantaggio then turned the meeting over to the Secretary pro tem Avantaggio who read the minutes of September 15. These were approved as read.

Dr. Charles R. Glassmire, President of the Maine Medical Association, was introduced and spoke of the necessity for active physician participation in organized medical affairs. He urged contributions to MEMPAC, our "union and lobby."

Old business - there was none.

New Business - Dr. Samuel L. Belknap, reporting for the Board of Censors, recommended the acceptance of Dr. Walter H. Sieling, Jr. into the County Medical Society. This was moved, seconded and passed without dissent. Dr. Sieling was urged to begin work that night if possible.

Dr. Nelson P. Blackburn then introduced Dr. Donald Lang, otolaryngologist, of Brunswick. Dr. Lang presented members and guests with a visual and auditory trip through the lands of the hard of hearing and noted the therapies available for treatment.

The meeting was adjourned at 9:45 p.m.

FRANK O. AVANTAGGIO, JR., M.D., *Secretary pro tem*

### CUMBERLAND

The 356th meeting of the Cumberland County Medical Society was held on November 19, 1970 at Valle's Steak House in Portland, Maine. There were seventy-three members and guests in attendance. After a pleasant social hour, an excellent dinner of roast beef was enjoyed by the Society, and the meeting of

*Continued on Page IX*



the Society was called to order at 8:00 p.m. by the President, Dr. George F. Sager.

It was moved, seconded, and voted that the reading of the minutes of the previous meeting be suspended.

Dr. Robert F. Ficker then addressed the group as our District 1 Representative, giving a brief discussion of the meeting in York County on Wednesday, November 18th, of his Society, to discuss the drug situation. Dr. Ficker made mention of the Delegate's meeting to be held in Waterville, December 13th, urging all Delegates and Alternates to attend.

A note of thanks from the Maine Association of Medical Assistants was read by the Secretary. This note expressed thanks for the gift of \$100.00 from the Cumberland County Medical Society to help the Medical Assistants set up a Registry Bureau.

Membership was next discussed. Those doctors having their application for membership to the Cumberland County Medical Society being read for the first time were Drs. Myron K. Krueger and John D. Kilgallen. Membership applications read for the second time were those of Drs. Kenneth A. Gluck and Robert C. Milsovic. Following the reading of their applications for membership and their proper endorsements, it was voted by the Society to accept them into membership. The application of Dr. Bernard L. MacKinnon for membership in the Cumberland County Medical Society was read, it being accompanied by a letter of transfer from his previous medical society in New Brunswick, Canada. His application and letter of transfer being in order, Dr. MacKinnon was voted into membership of the Cumberland County Medical Society by those in attendance.

Next order of business was the reading of a proposed change in the Bylaws of the Cumberland County Medical Society. This proposal was read by the Chairman of the Bylaws Committee, Dr. Robert H. Pawle, and then a lively debate from the floor followed. Questions were answered, and the proposal next is to be printed and mailed to the membership of Cumberland County Medical Society to be further considered at its next regular meeting.

The meeting of the Society then adjourned and Drs. Robert P. Timothy and Walter B. Goldfarb presented a travelogue of their trip in June 1970 to the Rio Grande de Notra in Brazil where they observed the medical practice and medical phenomena of that country. The pictures were of excellent quality, the dialogue humorous and entertaining, presenting an interesting study of the problems presented by the extreme poverty and perplexing problems facing our neighbors to the South.

DOUGLAS R. HILL, M.D., *Secretary*

## Announcement

### National Ambulatory Medical Care Survey

The National Center for Health Statistics in the Department of Health, Education, and Welfare, as part of its continuing program to provide data on the health status of the American people, is currently planning the National Ambulatory Medical Care Survey (NAMCS). The purpose of the NAMCS is to collect objective, quantitative information which can be used to describe the types of ambulatory patients seen by physicians, the nature of the patients' problems and the resources for their care. This information is needed by leaders in medicine and related professions for planning and organizing health services, for planning efficient utilization of health facilities and manpower, and for determining modifications in medical education.

The survey will involve a national sample of physicians who will be requested to provide data concerning a small number of the ambulatory patients they see. When the NAMCS is in full operation (sometime in 1972), about 3,000 physicians

each year will be providing data on an estimated 240,000 ambulatory patient visits. Physicians selected to participate in the survey will provide information concerning a sample of the patients that they see during a two-day period in each of four consecutive calendar quarters. All physicians will be replaced by new sample physicians after participating for four quarters. The types of data the survey will collect include age, sex, and medical problems of patients plus treatment prescribed and laboratory tests performed for patients. Of course, all data will be held completely confidential and used only for statistical purposes.

Ambulatory medical care is by far the largest segment of the American health services system in terms of prevalence and volume. Yet, little has been done on a national scale to gather reliable information for use in planning and research. The dearth of information on this subject has led leaders in the medical profession to persuade the National Center for Health Statistics to undertake the National Ambulatory Medical Care Survey. This information will complement the health data already being obtained by the Center through its ongoing national surveys: the Health Interview Survey, Health Examination Survey, and Hospital Discharge Survey. The success, of the NAMCS, of course, will depend on the cooperation of practicing physicians who are the major source of ambulatory medical care data.

The American Medical Association and numerous other major medical associations have expressed their support for the NAMCS and have provided advice and consultation in its development. With the cooperation of practicing physicians, the survey will provide very valuable data for documenting the health status of the American people and for informing public and private policy makers. — I urge all Maine Physicians to participate.—DFH.

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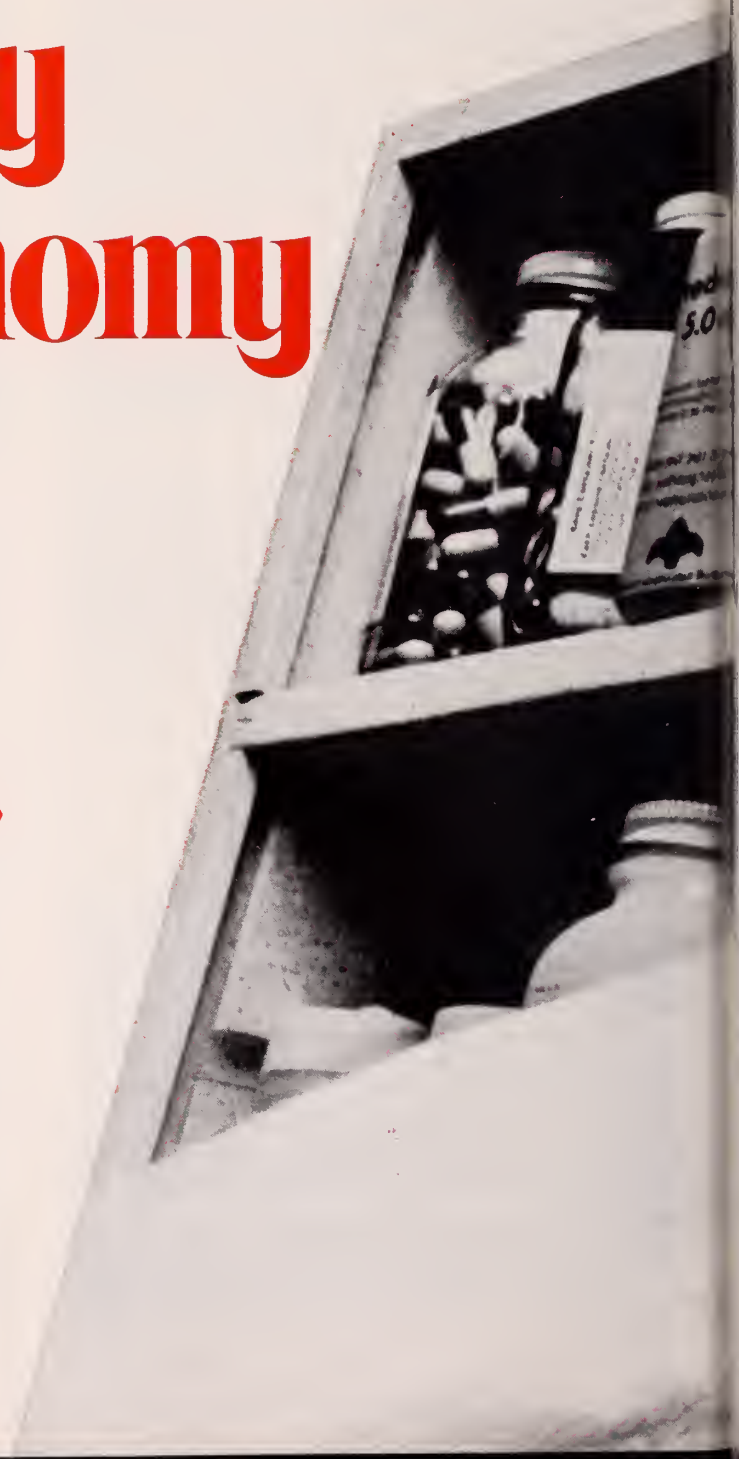
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# The Journal of the Maine Medical Association

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## Continuing Medical Education — Who Needs It? You Do — We All Do!

RICHARD T. CHAMBERLIN, M.D.\*

### INTRODUCTION

Continuing medical education — who needs it? You do — We all do! So might one paraphrase a current television commercial message about America's Railroads. One cannot dispute the clarity of this message. The fact that the medical profession has had some difficulty responding to this call makes it appropriate to continue to study the problems of continuing medical education and to find solutions. This communication will draw some parallels to points covered in a similar article in 1966 and will review the recommendations of the Second National Conference of State Medical Associations' Representatives on Continuing Medical Education held in Chicago in October 1970.<sup>1</sup>

### DEFINITIONS

What is medical education? Seemingly an easy question to answer. In 1966 one level of medical education — the internship seemed to be under the influence of forces which might be considered a bit foreign to truly basic educational tenets. The prospective interne seemed more concerned about a hospital offering all manner of personal fringe benefits than he did about the content of the internship itself. This is in some contrast to the attitudes expressed by the internes of 1969. At the Annual Meeting of the Association for Hospital Medical Education held in Chicago in February 1970, Mr. Kenneth Hekman, a senior medical student from Wayne State University of Medicine, reported on an evaluation of the internship. His report was based on an analysis of thirty-two hundred questionnaires which had been returned from a seventy-five hundred unit survey of physicians who had just completed a year of internship. Using mark sense cards, various factors were correlated. The results indicated that there were only two factors why an interne would recommend the

internship to others that were statistically significant. First was education and second was recreation. The latter was just barely statistically significant, the former had a high degree of statistical significance. Going further, Mr. Hekman pointed out that the returns indicated that the following items were not considered to be of relatively high importance to the educational process by those who answered the questionnaire: clinical experience, caliber of the medical staff, bedside rounds, conferences, and lectures. More basic to this, the following were listed as necessary elements in education: well defined objectives, supervision, and evaluation. He went on to stress a definition of education as being, "that process which results in a relatively permanent change in a person's behavior."

The important point here is not whether you take exception to the opinions expressed in the questionnaire, but is the question, "Could *you* have approached this degree of sophistication in attempting a definition of education at the end of *your* internship?"

Before attempting another definition, one might profit from considering some statements made by Dr. Eugene Stead, Chief of the Department of Medicine at Duke University School of Medicine, in an article entitled "Medical Education and Practice."<sup>2</sup> Dr. Stead sees a physician's education consisting of four parts. "(1) Preparation to function as a citizen. (2) Language preparation so that he can obtain content as needed from books written in part in symbolic languages. (3) Development of problem solving abilities. (4) Application of known knowledge to medical practice." With this in mind, he goes on to make a significant comment. "One can make a first approximation of the success of an educational program by watching a doctor at his work. If he has time in the day to be thoughtful, if he can gain new content by the use of his training in symbolic language, if he is continually preparing for the medicine of tomorrow, the educational system is justified. If he is harried, tired,

\*Thayer Hospital, Waterville, Maine 04901.



handling patients in a routine non thinking way, the educational system has failed."

It is now appropriate to consider the definition of the word "continuing." Webster's Dictionary gives several definitions which are interesting to reflect upon in light of Dr. Stead's comments. In one sense to continue is "to extend in duration or to carry onward and extend." However, in another sense to continue is to "remain in a given place or condition."

In summary, we are left with an interesting situation to ponder. Firstly, it is doubtful that any physician would choose the latter definition and want his continuing education to help him "to remain in a given place or condition." Secondly, if the system of education we were exposed to was so poorly designed in light of the recent knowledge explosion and shortages of trained personnel that it is undergoing an almost total redesign of both curriculum and time requirements, do we also want to choose the other definition of to continue? If so, we are merely "extending in duration or carrying onward" a situation which has left many of us "harried, tired, and handling patients in a routine, non thinking way."

#### CURRENT RECOMMENDATIONS

The Second Annual Conference of State Medical Association Representatives on Continuing Medical Education considered the problem in five frames of reference: (1) motivation, (2) evaluation, (3) organization and methods, (4) the role of the State Medical Association, and (5) financing. As would seem obvious, there is considerable overlap among these approaches. One of the tenets which was considered basic to all of these discussions was that which equates continuing medical education to high quality patient care.

*Motivation.* Although there are a number of motivating factors such as increased respect of colleagues, personal reassurance, and professional prestige, the factor which caused the most controversy was that of requiring the practicing physician to show evidence of continuing education as a prerequisite for membership in a medical society. Led by the American Academy of General Practice which has had such a requirement for several years, several state medical societies have more recently made this a requirement for continued membership. One of them, Pennsylvania, has chosen to require its physicians to obtain the American Medical Association's Physician's Recognition Award as the specific prerequisite requirement for membership in that society. After much discussion the Conference adopted the following resolution, "State medical societies should be urged by the American Medical Association to give serious consideration to the establishing of specific requirements for participation in postgraduate educational activities as a prerequisite for continuing membership in the society." This recommendation is considered important enough to enumerate the points both for it and against it. Those favoring it include: (1) reassurance to the public that the profession is striving to improve its capabilities. (2) The medical

society would reaffirm itself as a scholarly professional organization. (3) The stage would be set for development of more objective methods to determine educational needs. (4) Closer understanding and collaboration between academic medicine and the practicing physician. Countering these arguments are some important negative ideas: (1) This approach does not assure that there will be a truly personal commitment to self improvement on the part of the physician. (2) This would provide the government with a ready made mechanism for control should it choose to use it. (3) Documentation of attendance at continuing education programs does not insure that the participants competence has been improved. (4) Those who do not belong to the society are not affected. (5) There would be a tendency to perpetuate the same type of continuing medical education programs we now have, many of which have been shown to be ineffective in any objective way.

With these points in mind and allowing for the fact that the resolution was adopted, it is of perhaps greater significance that the following resolution was also adopted. "That the American Medical Association endorse the development and use of the problem oriented medical record system, or other appropriate system, as an objective means to improve the quality of medical care." The group felt that the problem oriented medical record system offered several features which were related to continuing medical education, some of which transcended just the area of motivation. (1) It is a system which is used at the bedside with the patient and is thus practice oriented. (2) It identifies areas of educational needs. (3) It helps make such education more relevant to practice. (4) It facilitates medical audit - or in other words it provides for evaluation. (5) It provides a strong motivating force for self education.

A final important point in respect to motivation. We must demonstrate that there is a cost benefit related to continuing medical education. That is, we must show that there is a cost benefit to be derived if we provide effective, meaningful, continuing medical education. It is not enough to demonstrate better patient care. We must also show that this care results in a real dollar saving to the medical care system in the long run. It was the strong feeling of this group that if this cost benefit could be shown, this perhaps would be the best motivating force one could develop.

*Evaluation.* Again, the opinion was expressed that evaluation of patient care and evaluation of continuing medical education are closely related and, in fact, are considered by many to be one inseparable discipline. Similarly, evaluation must be in terms of improved patient care and not in terms of financial savings alone as is now often the case. If as mentioned above, however, it can be shown that improved patient care does in truth lead to a true financial saving, then evaluation in terms of finances makes sense. Evaluation can only be accomplished by the development of criteria of care which can be used as a yardstick. These criteria must be developed locally with

the assistance of the state medical society. With these thoughts in mind, the following resolution was accepted by the Conference, "Quality of care evaluation is an educational tool which identifies needs for individual and group education. This must be its immediate goal. Any other use must be secondary. Such evaluation must, therefore, be the prime commitment of the professional society, whether the society's function is national, state, county, institutional, or specialty.

"It is a fact that any organization responsible for evaluation will control the quality of medical care. It is also recognized that quality of care definitions represent a dynamic concept into which the health team, including the patient will have significant and repeated inputs.

"Therefore, be it resolved, in each state, that the state medical society should provide overall coordination — leadership of continuing education and quality of medical care evaluation, and must control and support financially this evaluation in a formal, official and legal way, as an expression of the policy of the American Medical Association."

*Organization and Methods.* Any organization or methodology is seen again as having one primary goal — quality of patient care. Because the American Medical Association represents most physicians and allows for a wide variety of interests, it should provide the leadership along with state medical societies. The American Medical Association can do this in several ways. (1) To act as a coordinator of the numerous organizations of health professionals such as The American Hospital Association, The American Medical Association, The Association of American Medical Colleges, etc. (2) To be a clearing house of information about continuing medical education stimulated from the above groups. (3) To be a catalyzer such as the development of the Physicians' Recognition Award. (4) To be a publicizer and information disseminator through news releases, the Journal of the American Medical Association and the Continuing Medical Education Newsletter. (5) To be a purveyor of scientific meetings and instructional courses where necessary and where not provided by others. (6) To be a promoter of continuing medical education through funding and staffing where necessary. (7) To be an evaluator through mechanisms of accreditation. (8) To be a researcher, including such items as what does a doctor actually do and how does this relate to his needs for continuing education.

*Role of the State Medical Society.* Closely related to the last section, the state medical association would naturally expect to be included in the organization of continuing medical education as a subsidiary of the American Medical Association. It should have some distinctly unique functions, however, other than simply helping to implement the American Medical Association's role. The state medical association should have a primary role in assessing the educational needs of its own members. Ideally this should be by a method of evaluating a physician's behavior in practice which would be ongoing in such a

way to serve as an evaluation of the effects on that behavior caused by continuing medical education programs. A corollary of this recommendation is related to the fact that a physician's behavior is best evaluated where it actually occurs — that is in his practice in a community hospital. Thus, the state medical association should stimulate and assist community hospitals to do their job in this area, especially those community hospitals of small size who cannot do this alone.

*Financing.* The recommendations on financing were perhaps the most difficult to derive. The conference seemed to indicate that until continuing medical education is better defined and more meaningful programs developed, it is impossible to recommend specific financing methods. It was agreed, however, that several groups should probably share the cost once it is defined. These include: (1) the consumer of medical care through the hospitals which render such care. Community hospitals should allocate from one to three percent of their annual budgets towards continuing medical education of their own medical staffs. (2) The federal government through programs which are designed to assure quality of medical care to the taxpayers, such as Regional Medical Programs. (3) The medical schools through departments of continuing medical education. (4) The individual physician himself. (5) Voluntary agencies and foundations. (6) Organized medical and specialty societies. With these thoughts in mind, the conference adopted two specific recommendations.

(1) More money should be presently spent on the definition of the problems which need solution, and establishment of a system which will solve those problems rather than expending our current resources for the further development of new educational techniques. Presently a great deal of money is being spent in developing educational techniques without an adequately structured system in which to spend that money. Once an organized and standardized educational system is developed, then money for educational techniques and programs can be more wisely spent.

(2) State medical societies, with the direction of the American Medical Association should make significant attempts at this time to develop the administrative potential of tapping financial resources and directing the expenditure of these monies more efficiently for effective continuing medical education.

## CONCLUSIONS

(1) Continuing medical education must be closely related and relevant to actual medical practice. This has the following corollaries, (a) It will be more available to each physician so that he will not have to travel great distances, (b) it will make the community hospital the prime locus of continuing medical education.

(2) The problem oriented medical record system should be considered as a mechanism to: (a) assess educational needs, (b) provide for an immediate bene-

*Continued on Page 23*



# Medical Staff Structure — Thayer Hospital Version

EUGENE M. BEAUPRE, M.D.\*

## I. The Director of Medical Services.

"Should medicine ever fulfill its great ends, it must enter into the larger political and social life of our times; it must indicate the barriers which obstruct the normal completion of the life cycle and remove them. Should this ever come to pass, medicine, whatever it may then be, will become the common good of all. It will cease to be medicine and will be absorbed into that general simplified body of knowledge which is identifiable with power."<sup>1</sup>

This prediction by Virchow in 1849 seems to be coming to pass. Social and political pressures from many sides seek to change the current methods and structures for health care delivery and make them more socially responsive. Heretofore, clearly defined roles for patient care have been accepted for all. Now large numbers of highly specialized paramedical personnel crowd the physician from all sides and make his role less dominant and well defined.

It is too late to try to retrench and resist change. Physicians and all other purveyors of health care must find an organizational structure acceptable to not only themselves but also the collective consumer they have to serve. This will have to be done at all levels, state, national, and local. Careful planning and implementation must take place at every level. The greatest urgency for planning is at the local level. It seems clear that if the peculiarities of local health care needs are not considered when local planning occurs, any prototype arrangement from larger scale planning will not suit local circumstances.

A burden then falls on the community to organize its health care resources into a unit which both fulfills local need and fits into the larger organizations of state, regional, and national patterns.

As medicine has evolved at the community level, the hospital has gradually assumed a central role in providing an opportunity for an organized medical group to interact with professional health care administrators and trustees. The preamble to the Catholic Hospital Association Statement of Principles of the Integration of the Medical Staff Activities into the Management of the Total Hospital Operation says, "The demands on hospitals today to bring about institutional effectiveness can be met only by competent hospital management — management that successfully coordinates all of the institution's skills, disciplines, services, and facilities to achieve a cohesive and integrated hospital operation. This means involving, to a greater extent than heretofore, the medical staff — the group in the total operation which exercises the greatest

influence on the quality, quantity, and cost of hospital care. Not infrequently board-management-medical staff relations are afflicted with misunderstanding, dissension, and, at times, open conflict."<sup>2</sup>

To keep such differences to a minimum, Dr. Walter W. Carroll proposes the formation of what he calls, "The Hospital Trinity." He states, "It is, therefore, easily seen that the members of the governing body, the administrator and his staff, and the medical staff are all responsible for total care, with ultimate legal responsibility residing in the Board of Trustees. This is the hospital trinity, and the segments should not function as separate entities."<sup>3</sup>

As a result of a recent revision of medical staff bylaws, Thayer Hospital has adopted a new organizational interaction between the three principal groups in the hospital mentioned above. The new standards for accreditation of hospitals of the Joint Commission on Accreditation of Hospitals has allowed considerable latitude in development of professional hospital structure.<sup>4</sup> They have defined the activities they feel must be carried out by the medical staff but have not insisted on a stereotyped organization to carry out these functions. They insist that the staff must insure that any new member be qualified for the clinical privileges granted him, and that the staff be organized to accomplish its required functions. They require continual review and evaluation of the clinical activities of the members of the staff and that they "participate in the maintenance of high professional standards by representation on committees concerned with patient care." They insist that there be regular meetings of the medical staff to review clinical work and to complete medical staff administrative duties. There must, of course, be written minutes to substantiate such meetings. They lastly expect that the staff bylaws and rules shall establish a framework for self-government and a means of accountability to the governing body. These then are the guide lines that any staff structure must be planned to accommodate.

Until recently, it has been strikingly apparent that hospitals employ large numbers of people to carry out the strictly administrative duties of a hospital. But the considerable work necessary to live up to society's expectations of doctors has of necessity been carried out in the spare time of individuals whose professional lives are already harassed by the demands imposed by the practice of medicine. It seems clear that one cannot ask the medical staff to fulfill all the obligations expected of them without some full-time assistance. For this and other reasons, there is a growing trend toward using full-time salaried professionals in the hospital structure.

The new Thayer Bylaws provide for the appointment

\*Director of Medical Services, Thayer Hospital, Waterville, Maine 04901.



of a Director of Medical Services. For him a lengthy job description was prepared. His duties can be condensed into the following:

- (1) He shall see that the medical staff is properly organized and shall be responsible for the quality of medical care and the promotion of standards necessary to achieve it. He will serve as a professional liaison person between the staff and Board of Trustees. He will attend the Board meetings regularly but not be a voting member.
- (2) He will be responsible for watching health care developments on the national scene and see that the Thayer Hospital and its Board of Trustees are fully aware of national direction and demand.
- (3) He will answer directly to the Board of Trustees for professional matters, but work closely with the hospital administrator for coordinated planning at all levels. Any hospital activity which affects quality of patient care must be reviewed jointly by the Administrator and Director of Medical Services.
- (4) He shall be an ex officio member of all staff com-

mittees except the Nominating Committee, offering guidance to departments and committees in carrying out their functions.

- (5) He shall engage in limited clinical practice as approved by the Board of Trustees.

Thus the Director of Medical Services becomes the coordinating individual between the Medical Staff, the Administrative Staff, and the Board of Trustees. One can readily see that his duties are primarily those of influencing the activities of all three groups without dictating policy. The person in such a job must be flexible enough to arbitrate the differences of opinions occurring so often in hospitals.

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## Medical Staff Structure — Thayer Hospital Version

SAMSON A. FISHER, M.D.\*

### II. Problems in Staff Organization.

The emergence of the medical staff from its sheltered position within the hospital, into the bustle and fray of organization medicine, has brought many new problems into sharp focus. The doctors with their collective intelligence and experience, and their community interest, are uniquely qualified to make a substantial contribution to the solution of these problems. There are two aspects of this new relationship. On the one hand, the staff, with its long tradition as a silent and pampered partner, has to force its attentions on what may be a reluctant Board of Trustees and Administration. On the other hand, those who envision a new role for physicians in the hospital and the community, must labor to persuade many reluctant staff members to get involved in activities of responsibility and authority.

There are certain areas in hospital and community medicine<sup>1</sup> where the staff is eminently qualified to function and must supply leadership in these areas. It follows that the staff must have authority and influence if its efforts are to have any significance. To accomplish its goals, this requires a strong, well-organized, well-integrated staff. To this end we have designated the Executive Committee<sup>2</sup> custodian of staff authority. It has original responsibility for all staff business. It is charged with

taking the initiative in all matters where the staff is concerned. When business is referred to standing committees, these committees have the authority to take whatever action is indicated, so long as problems can be resolved to the satisfaction of everyone concerned. If there is disagreement or conflict, or inability to take effective action, the problem is referred back to the Executive Committee.

The executive committee encounters other hospital groups at various levels. A patient care committee has been set up and is composed of representatives of the staff, administration and nursing service. It meets regularly, and its business is to discuss everything that happens to a patient in the hospital. The staff is in a good position and possibly in the best position to evaluate the quality of nursing care. It has an obligation to observe, discuss, criticize and teach. It should be a staff prerogative to participate influentially in arriving at major nursing service decisions.

Nurses are assuming a new role in patient care. With the coronary care unit as a prototype, it is evident that the nurse is not only called upon to diagnose and treat, but she may in fact be more competent than many physicians in handling a coronary emergency. She may preempt the physician, in certain situations, and assume primary responsibility for emergency treatment. With this new doctor-nurse relationship evolving, it is necessary for the

\*Chief of Staff, Thayer Hospital, Waterville, Maine 04901.

medical staff to develop a closer knit association with the nursing staff. This may require a readjustment in administration's position of authority.<sup>3</sup>

The medical staff and the board of trustees encounter each other in a hazy, ill-defined atmosphere, and a comfortable, mutually rewarding relationship has to be worked out. The current trend for physician members of the board of trustees may be desirable but with reservations. Such an appointee would be a representative of the community with some expertise in the special area of medicine; but he is not a representative of the staff. The hazard is that he may in effect become a representative of the staff and a means of circumventing the staff, to the detriment of the staff organization and the staff's interests.

The staff's point of view and prerogatives may be more effectively asserted in other ways. A satisfactory arrangement would seem to be one where the chief or president of the staff routinely attends trustee meetings and routinely reports on staff activities. He should feel free to participate in all discussions. When the nature of their business is such as to require it, the trustees are of course free to meet in executive session. Participation should be a staff right, and it should be an organized staff effort. It should not be limited to participation by individual physicians, because of presumed special competence, at the invitation of the trustees.

The trustees on their part should facilitate the participation in hospital business by those doctors who are interested.<sup>4</sup> They should concede the staff's right to participate in planning and development at the earliest phase, and participate influentially in decision making at all levels. The hospital organization must be such that the staff, through its executive committee, reports directly to the trustees and not to an intermediary.<sup>5</sup> Probably this relationship, more than anything else, imports to the staff a sense of maturity and responsibility and imposes on the staff the necessity to demonstrate these qualities in their deliberations.

The function and place of the medical director, and a chief or president of the staff, is difficult to define except in the broadest generalities. A medical director primarily

represents the trustees, and the other person represents the staff. Both should have as their primary goal a more effective hospital organization to deliver better medical care. They should both have easy access and a comfortable working relationship with the trustees, the administration, and all departments and services. Jockeying for a position or influence should be unacceptable.

It would appear to be an error to write a too well-defined job description for either office. Probably the most useful purpose this serves is to protect the medical director from having new, unexpected and unreasonable demands thrust upon him. It might likewise protect the chief of staff from responsibilities he is not prepared to assume. On the other hand, a confining job description may prohibit either one from getting involved in areas of activity that are neglected or foundering, or innovative, or for personal reasons have a high level of interest. The overall purposes of the hospital may be better served if the interests and prerogatives of various individuals in the hospital structure are not too sharply defined. This may permit freer give and take in discussion groups, a better exchange of ideas, and a better atmosphere in which the best solution to a problem gradually emerges.

In summary, the medical staff should establish a modus operandi for more active participation in positions of authority and responsibility, in the medical affairs of the hospital and the community. A major effort in this direction should be on the staff agenda for the seventies.

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# Criteria Audit for Hodgkin's Disease

ANTHONY BETTS, M.D.

During the last 5 years supra-voltage radiation given to patients with Hodgkin's disease, when the process was confined to the lymphatic system, has produced a high percentage of "cures."<sup>1</sup> This newer extensive therapy can be temporarily and severely debilitating and is contraindicated in those patients who have symptomatic, widespread disease with organ involvement. They will be rendered miserable and without long lasting benefit.

Thus it has become essential today to determine, as accurately as possible, the degree to which the disease has spread and this is usually expressed in the record in the form of a staging as recommended by Peters<sup>2</sup> (Chart #1). Then everyone involved in the patient's future care may know the clinical situation.

A further useful advance towards obtaining rational therapy and prognosis has been a review of the histology of Hodgkin's disease of lymph nodes by Lukes.<sup>3</sup> For many years the Parker and Jackson<sup>4</sup> classification of paraganuloma, granuloma, and sarcoma was useful in clarifying the disease process but there was a general tendency to put most cases into the wide category of granuloma. Lukes has now called attention to some further subdivisions of the granuloma where there is an excellent prognosis with appropriate cobalt therapy.

In cancer centers and teaching hospitals, by the nature of the hierarchy system, it is easier to evolve and stick to a pre-determined work-up for disease than in a community hospital. The community hospital physician follows his own acquired methodology and this may show considerable variation from one doctor to another. Seldom is this analyzed.

At Thayer Hospital, a study has been underway for two or three months, with a new form of audit<sup>5</sup> which allows physicians to review each other's work based on criteria for any particular disease, settled in conference by themselves. The criteria so derived are set down and handed to the chief record librarian who then draws upon the charts for that disease and analyzes them. He then sends back to the Audit Committee the set of forms with the criteria checked off to demonstrate whether or not these have been followed. By comparison, this immediately gives a pattern of performance in that particular field and leads to a discussion which can be based upon local standards or upon those established nationally. This type of audit, particularly in the field of cancer, has produced several stimulating, atraumatic sessions at Thayer Hospital; and it was with this in view that it was decided to apply the method to an examination of the work-up and treatment of Hodgkin's disease.

The criteria selected for the work-up of Hodgkin's disease, ultimately came very close to that suggested by the Stanford University group.<sup>6</sup> The criteria selected may

CHART 1

<i>International Staging Classification for Hodgkin's Disease</i>	
Stage I:	Disease limited to one anatomic region or two contiguous anatomic regions on the same side of the diaphragm.
Stage II:	Disease in more than two anatomic regions or in two noncontiguous regions on the same side of the diaphragm.
Stage III:	Disease on both sides of the diaphragm but not extending beyond the involvement of the lymph nodes and the spleen or Waldeyer's ring, or both.
Stage IV:	Involvement of bone marrow, lung parenchyma, pleura, liver, bone, skin, kidney, gastrointestinal tract, or any tissue or organ in addition to lymph nodes, spleen, or Waldeyer's ring.

be seen in Chart #2. They are grouped under history, physical examination, x-ray investigation, laboratory and surgical procedures. It was apparent that not every patient required every test; but in order to be all embracing, all criteria were listed for each patient. For example, where liver function tests were equivocal then liver biopsy was indicated; where the chest x-ray examination was unclear, then perhaps tomograms would be required. Similarly, discretion would be used with regard to lymphangiograms and exploratory laparotomy.

## METHOD

The 12 most recent cases of Hodgkin's disease were selected. The oldest case was in 1967. The most up to date were 3 in 1970. The hospital charts were initially examined by the Record Librarian, together with the criteria forms designed by the physicians at audit and these were filled in for each particular case. The charts and criteria forms were then reviewed by this author and any questions then resolved. Early in the study it was noted that only 2 of the 12 cases had been staged by the attending physicians. In order that in this paper the results could be put into perspective, it was decided that an arbitrary staging would be made from the records by the author, taken at the time when the patient was last seen. These stages are recorded in Chart #3. It should be emphasized that the entire record in each case was reviewed for evidence as to whether a particular symptom, physical finding or investigation had been recorded. Negative findings were naturally considered important.

## RESULTS

These are given in Chart #4. With one patient, there was an obvious difficulty in determining a history or for doing any extensive work-up in that she presented in a terminal and semicomatose state. The remaining 11 pa-

CHART 2

*Recommended Data Sheet for Patients  
with Hodgkin's Disease*

<i>History:</i>	<i>Physical:</i>
Loss of Weight	Waldeyer's Ring Felt
Itching	Neck Nodes Enlarged
Jaundice	Supraclavicular Nodes Enlarged
Noticed a Lump	Axillary Nodes Enlarged
Persistent Sore Throat	Brachial Nodes Enlarged
Fatigue	Inguinal Nodes Enlarged
Mass in Abdomen	Popliteal Nodes Enlarged
Bleeding	Liver Enlarged
Fever, Periodic	Spleen Enlarged
	Abdominal Masses
<i>Radiology:</i>	<i>Laboratory:</i>
Chest X-ray:	W.B.C.
If chest X-ray positive, tomogram:	Hemoglobin:
Lower extremity lymphangiography:	R.B.C.:
Skeletal survey:	Platelets:
If not Hodgkins, Ba Stomach:	Serum Alk. Phosphatase:
I.V.P.:	B.S.P.
	Protein Electrophoresis:
	Uric Acid:
	Bone Marrow:
	Liver Biopsy:
<i>Laparotomy:</i>	
If lymphangiogram is equivocal:	
<i>Pathology Report: (Name one only)</i>	
Lymphocytoma:	
Lymphoblastoma:	
Lymphosarcoma:	
Hodgkin's Paragranuloma:	
Hodgkin's Granuloma:	
Hodgkin's Sarcoma:	
Hodgkin's Lymphocytic and Histiocytic Diffuse:	
Hodgkin's Lymphocytic and Histiocytic Nodular:	
Hodgkin's Nodular Sclerosis:	
Hodgkin's Mixed Cell Type:	
Hodgkin's Lymphocytic Depletion:	

CHART 3

*Stages of Twelve Cases of Hodgkin's Disease  
at Thayer Hospital 1967-1970*

Stage	Patients
IA	2
IIB	4
IIIB	2
IIIA	1
IIIB	2
IV	1

tients, however, were in hospital for periods each in excess of 3 days.

### DISCUSSION

It would seem that there is a wide variation in the work-up of Hodgkin's disease at the Thayer Hospital. In several instances it appears that the exact extent of the disease was unknown or only approximated before therapy was started. That 2 patients of the 12 were staged in the hospital record did not necessarily reflect that the pa-

CHART 4

	<i>Yes</i>	<i>No</i>	<i>Not Recorded</i>
<i>History:</i>			
Loss of Weight	4	3	5
Itching	1	1	10
Jaundice	1	—	11
Noticed a Lump	4	—	8
Persistent Sore Throat	3	1	8
Fatigue	5	1	6
Mass in Abdomen	5	2	5
Bleeding	—	2	10
Fever, Periodic	3	—	9
<i>Physical:</i>			
Waldeyer's Ring Felt			12
Neck Nodes Enlarged	10		2
Supraclavicular Nodes Enlarged	6	1	5
Axillary Nodes Enlarged	2	1	9
Brachial Nodes Enlarged	2	0	10
Inguinal Nodes Enlarged	5	3	4
Popliteal Nodes Enlarged	0	0	12
Liver Enlarged	3	4	5
Spleen Enlarged	3	3	6
Abdominal Masses	3	4	5
<i>Radiology:</i>			
Chest X-ray:	12	—	—
If chest X-ray positive, tomogram:	—	12	—
Lower extremity lymphangiography:	3	9	—
Skeletal survey:	4	8	—
If not Hodgkin's, Ba Stomach:			
I.V.P.:	4	8	—
<i>Laboratory:</i>			
W.B.C.:	12	—	—
Hemoglobin:	12	—	—
R.B.C.:	12	—	—
Platelets:	8	4	—
Serum Alk. Phosphatase:	8	4	—
B.S.P.:	7	5	—
Protein Electrophoresis:	5	7	—
Uric Acid:	5	7	—
Bone Marrow:	3	9	—
Liver Biopsy:	3	9	—
<i>Laparotomy:</i>			
If Lymphangiogram is equivocal:	2	10	—
<i>Clinical Stage:</i>	<i>Date of Occurrence</i>		
I	1		
II			
IIA			
IIB			10
IIIA			
IIIB	1		
IV			
<i>Pathology Report: (Name one only)</i>			
Lymphocytoma:			
Lymphoblastoma:			
Lymphosarcoma:			
Hodgkin's Paragranuloma:	1		
Hodgkin's Granuloma:	1		
Hodgkin's Sarcoma:			9 recorded as "Hodgkin's disease"
Hodgkin's Lymphocytic and Histiocytic Diffuse:			
Hodgkin's Lymphocytic and Histiocytic Nodular:			

Hodgkin's Lymphocytic and Histiocytic  
Diffuse:  
Hodgkin's Lymphocytic and Histiocytic  
Nodular:

History:	Not	
	Yes	No
Hodgkin's Nodular Sclerosis:	1	
Hodgkin's Mixed Cell Type:		
Hodgkin's Lymphocytic Depletion:		
<i>Organ Review Pathologically:</i>		
	Yes	No
Lymph Node	12	
Spleen	3	9
Liver	3	9
Bone Marrow	3	9

tient could not be staged; for the author had personal knowledge of one case where the Stanford criteria had been followed even to the point of laparotomy. In this patient's record it was possible to extract information which would allow a reader to stage the case, but this is not as satisfactory as having the attending physician himself determine and record it. This might support an argument for problem oriented records. Another point of interest was that in mid-1969 a Cancer Teaching Conference was initiated and among the earlier subjects was Hodgkin's disease. Reviewing the charts, all the 1970 cases show a considerably more extensive investigation than those prior to that time.

#### SUMMARY

The purpose of this paper is to indicate a rapid and easy method of examining, in a community hospital, the standard of work-up for a particular disease, in this in-

stance Hodgkin's. This method of audit differs from the usual medical and surgical audit where random charts are taken and read, in that a particular subject can be reviewed by physicians who have determined their own criteria for any one disease. It has been found, at the Thayer Hospital, that the evolvement of the criteria and the self analysis of the results have been stimulating and form a good teaching session and results in a change of behavior. Furthermore, from the results it is possible to direct teaching programs in the community hospital towards deficiencies which are known to exist on a wide scale rather than to a single well-known offender.

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Thayer Hospital, Waterville, Maine 04901.

#### CONTINUING MEDICAL EDUCATION — WHO NEEDS IT?

YOU DO — WE ALL DO! — *Continued from Page 17*

ficial effect on patient care, (c) help develop a mechanism to begin the process of making cost benefit analysis of medical care, (d) provide evaluation both of patient care and of continuing medical education.

(3) The American Medical Association should continue to take the leadership in continuing medical education. It should oversee the entire field, help plug the gaps where they exist, and act as a clearing house and a disseminator of information so that efforts will not be duplicated.

(4) The state medical societies must develop mechanisms to assess the educational needs of its members and to assist community hospitals in developing their potential for continuing medical education.

(5) It is recognized that the ultimate goal of continuing medical education is improved patient care. It is also recognized that high quality patient care is expensive. This cost can only be met by a combination of resources including the consumer through the community hospital, the federal government, the medical schools, the individual physicians, voluntary agencies and foundations, and organized medical and specialty societies.

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# Giant Cell Reparative Granuloma\*

LORING W. PRATT, M.D.\*\* and IRVING I. GOODOF, M.D.\*\*\*

On rare occasions one may reach out and establish contact with his predecessors by studying footprints left upon the sands of time. It was given to us to do this in the literature search made during the preparation of this paper. When a lesion is encountered which at first appears new, it is gratifying yet humbling to find that long deceased scholars knew most of the important facts about the problem. This study was made to determine the salient features regarding the natural history, treatment and relationship to giant cell tumor of giant cell reparative granuloma.

Giant cell reparative granuloma is a relatively recent term which is used to describe a pathological condition which has been known for many years as benign giant cell tumor.

There is a large body of literature describing lesions, given widely divergent names, which have the same or essentially the same microscopic picture. The terms which have been used to describe this lesion when it occurs in the jaws are as follows: myeloid tumor of bone, myeloid sarcoma, tumeur à myéloplexes, aneurysmal bone cyst, osteoclastoma, giant cell sarcoma, benign giant cell sarcoma, pseudogiant cell tumor, benign giant cell tumor, epulis, giant cell reparative granuloma, and osteitis fibrosa. The "brown tumor" of hyperparathyroidism appears to be the same tumor microscopically but has a different clinical picture.

## HISTORICAL

The first reference to epulis we have encountered is in Pare.<sup>1</sup> In 1628 he described accurately the gross appearance of pseudogiant cell reparative granuloma, and recommended essentially the same therapy we use today, i.e., curettage and cautery. He suggested the use of a ligature which should be repeatedly "twisted" (tightened) prior to removal and actual hot cautery, protecting the surrounding tissues with a shield during its application. His early French work was translated into Elizabethan English in 1649 by Thomas Johnson,<sup>2</sup> from whose text we derived our view of Pare's thoughts on this subject. Other authors are as follows:

1818 Cooper and Travers,<sup>3</sup> cited by Shklar, made early descriptions of this lesion.

1845 Lebert<sup>4</sup> added his description and amplified the picture of epulis.

1850 Robin<sup>5</sup> made the first definitive study according to Nelaton.

1854 Pager<sup>6</sup> included them in his famous lectures on surgical pathology.

1860 Nelaton<sup>7</sup> in his 350 page monograph devoted to this entity, described it well and emphasized its benign character (Fig. 1). He correctly related the lesion in the jaws to that found in long bones (Fig. 2).

1911 Mallory<sup>8</sup> and in 1913 Barrie<sup>9</sup> thought the giant cells were transformed wandering endothelial leukocytes which became located in deposits forming these tumors.

1912 Bloodgood<sup>10</sup> reported a benign giant cell tumor which involved the mandible at first and then the maxilla one year later.

1930 Geschickter and Copeland<sup>11</sup> felt that they resulted from hypertrophy and hyperplasia of osteoclasts left at site of endochondral ossification and noted that they are indistinguishable from giant cell tumor.

1930 Hammer<sup>12</sup> indicated that there is no recognizable morphologic or histologic distinction between giant cell epulis and central giant cell tumor of the maxilla or the mandible.

1947 Berger<sup>13</sup> stated that these were resorptive inflammatory lesions which develop at the site of hemorrhage. He reported six cases. In three cases, when the growth involved the mental region, paresthesia resulted.

1948 Bernick<sup>14</sup> found this lesion to represent 0.01% of total admissions (67,833) to the dental clinics of the School of Dentistry at the University of Minnesota and 0.006% of 28,911 general surgical pathology specimens studied from that clinic.

1952 Cooke<sup>15</sup> found no case reported younger than age six, when the first permanent tooth erupts.

1953 Waldron<sup>16</sup> reported the occurrence of bilateral mandibular tumors in sisters and subsequent development of one in the daughter of the eldest sister. This produced a picture similar to that of Cherubism (familial mandibular fibroplasia).

1953 Jaffe<sup>17</sup> indicated that giant cell reparative granuloma is not distinguishable from giant cell tumor. This lesion is aggressive when located at the ends of long bones where it is called giant cell tumor of bone. He feels that the "giant cells bear a relation to the occurrence of hemorrhage and are not elements in a tumorous proliferation."

1954 Umiker<sup>18</sup> discussed pseudogiant cell tumors (reparative granuloma) in great detail and gave a detailed description of differences between giant cell reparative granuloma and giant cell tumor, which distinctions are not accepted as generally valid.

1954 Brannin<sup>19</sup> reported two cases of bilateral tumors of the mandible in siblings. There was a family history of diabetes.

1955 Phillips and Shefer<sup>20</sup> indicated a higher incidence in the young age group and pointed out the benign na-

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\*\*Chief, Department of Otolaryngology, Thayer Hospital, Waterville, Maine 04901.

\*\*\*Pathologist, Thayer Hospital, Waterville, Maine 04901.

ture of the lesion in the mandible in contradistinction to its malignant nature in the long bones.

1956 Pleasants and MacComb<sup>21</sup> reported on giant cell tumors of the jaws. They reported one in the mandible and one in the maxilla of the same patient. There had been only one previous similar report (Waldron 1951).

1956 Brown, Darlington, and Jupiter<sup>22</sup> divided epulis into three groups: a) *benign giant cell tumor*, which shows, microscopically, many giant cells associated with innumerable small cells resembling small fibroblasts with relatively little mature collagen. The growth is canalized by congeries of sinusoidal spaces choked with blood. b) *fibrous epulis* revealing microscopically a poorly vascularized cicatrizing adult collagenous connective tissue. The leading cell is spindle-shaped and resembles the adult fibrocyte. Giant cells are rare but by no means absent. c) *angiofibromatous epulis* is characterized histologically by an exceedingly rich blood supply. It is tunnelled by tortuous thin-walled capillaries. Giant cells are even more rare than in fibrous epulis.

1958 Pepler<sup>23</sup> concluded from his histochemical studies of giant cell tumors, including osteoclastomas and giant cell epulis, that the "osteoclastoma giant cells are active osteoclasts and not foreign body giant cells, skeletal phagocytes or degenerative cells; it is unlikely that stromal cells fuse to form giant cells."

1959 Austin and Royer<sup>24</sup> with 52 years experience from the Mayo Clinic to draw from, reported two cases of *genuine giant cell tumor* involving the jaws. In the same period of time, 68 cases of giant cell reparative granuloma were found.

1959 Bhaskar<sup>25</sup> of the Armed Forces Institute of Pathology pointed out that both maxilla and mandible are secondary bones phylogenetically. The mandible develops from endochondral and intramembranous bone formation and by the differentiation of secondary cartilages (the condylar and coronoid). The presence in the bone marrow of both odontogenic and nonodontogenic epithelium, teeth, and a centrally located blood supply are features peculiar to the jaws. For this reason, they are sites of numerous tumors and cysts. Giant cell reparative granulomata of the jaws behave differently than do giant cell tumors of the long bones. This same difference of behavior is noted in papilloma of the jaw, and by contrast the different clinical behavior of a histologically similar tumor in a different location, papilloma of the bladder. He reported on 104 cases.

1964 Yarrington<sup>26</sup> reported a case of aneurysmal bone cyst of the maxilla associated with giant cell reparative granuloma in a forty-eight year old white woman.

1968 Griffey and Tedeschi<sup>27</sup> reported the fourteenth case of a giant cell tumor complicating Paget's disease, the first one which arose within the ethmoid bone.

#### NATURAL HISTORY

Although giant cell reparative granulomas of the mandible are histologically identical with giant cell tumors which occur at the ends of the long bones, in the jaw



Fig. 1. Plate from Nelaton showing giant cell reparative granuloma of mandible.

they regularly behave in a benign manner, are most common in the 0-20 age group and in women. They appear most commonly in the premolar-molar area or near the canine tooth. The mandible is most frequently involved but the maxilla is also involved at times. They are relatively painless, slow growing lesions which slowly dis tend the mandible thinning its cortex and destroying its structure. They do not as a rule perforate the cortex, are self-limited and are never malignant although locally osteolytic.

#### DIFFERENTIAL DIAGNOSIS

1. Granuloma pyogenicum.
2. Carcinoma of alveolus.
3. Giant cell "node" or "brown tumor" of hyperparathyroidism.
4. Sarcoma of jaw.
5. Actinomycosis.
6. Soft tissue giant cell epulis.
7. Giant cell tumor.
8. Dentigerous cyst.
9. Dermoid cyst.
10. Hemangioma.





Fig. 2. Plate from Nelaton showing giant cell tumor of long bones.

11. Eosinophilic granuloma.
12. Traumatic cyst.
13. Follicular cyst.
14. Chondroblastoma.
15. Neurofibroma.
16. Fibrous dysplasia.
17. Cherubism - marked family history - bilateral disease.
18. Nonosteogenic fibroma of bone.
19. Chondromyxoid fibroma of bone.
20. Ameloblastoma.

#### X-RAY PICTURE

Radiologic studies reveal a rounded or oval area of increased radiolucence sometimes traversed by trabeculae. The tumor expands and thins the cortex of the bone but as a rule does not perforate it. The x-ray picture is not diagnostic. One of the cases reported in this paper was one in which the cortex was perforated.

#### GROSS PATHOLOGY

The gross appearance of these tumors is that of a reddish-brown, soft, spongy, friable, vascular lesion which is





Fig. 3. Low power view of giant cell reparative granuloma - Case 2 - showing distribution of giant cells in stroma of tumor x 40 - Hemotoxylin and Eosin stain.

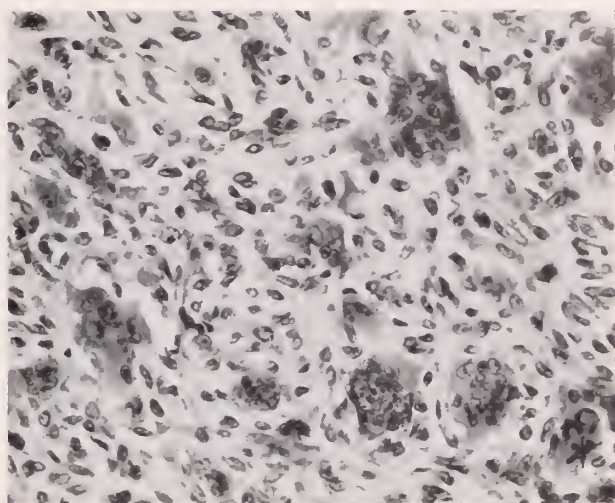


Fig. 4. High power view of giant cell reparative granuloma - Case 2 - showing details of multinucleated giant cells and the stromal architecture, x 350 - Hemotoxylin and Eosin stain.

not encapsulated. The size is variable as is degree of calcification and presence or absence of teeth.

#### HISTOLOGY

The lesion is characterized by large numbers of multinucleated giant cells which are distributed fairly evenly throughout the tissue (Fig. 3). They are large cells with many centrally located nuclei surrounded by large amounts of peripherally located cytoplasm (Fig. 4). They are found in a field of spindle-shaped or oval cells which are generally plump, have an active appearance, spindle-shaped or oval nucleus, prominent nuclear membrane and small nucleoli. There are occasional mitotic figures in the stroma but nuclear changes suggestive of malignancy are not seen. Hemorrhage is not a prominent part of the lesion proper.

The proliferating cells are basically fibrogenic and have a marked tendency to undergo metaplasia to a type of cell producing osteoid and bone. This is so in both central and peripheral giant cell reparative granulomas.

When there is considerable hemorrhage, the common terminology is aneurysmal bone cyst, but there is otherwise no distinctive character histologically in the tumor itself.

The histology suggests that in the jaws they are reactive rather than neoplastic lesions.

#### THERAPY

In the past, ineffective procedures such as extractions, incisions, and drainage and scraping of the bone have been used therapeutically. Partial excision of the tumor and biopsy is ineffective, but biopsy of the lesion is important and makes a definite tissue diagnosis possible.

Definitive therapy consists of curettage of the lesion with or without electrocoagulation. Extraction of teeth, when they are involved in the process, is an essential part of the therapy. It is not necessary to remove the mandible,



Fig. 5. Case 1 - giant cell reparative granuloma involving anterior lower gingiva.

unless it is already involved to the extent that the cortex is so destroyed that adequate curettage cannot be accomplished with its preservation. Although radiation has been reported as adequate therapy, it is neither necessary nor advisable. If the tumor is completely removed by the methods described above, and by electrocoagulation if necessary, the recurrence rate is extremely low. Recurrences may be satisfactorily treated by repetition of the primary therapeutic procedure.

#### CASE REPORTS

**CASE 1:** This five-year-old white male was first seen on 8 January 1961 with the complaint that he had a recent upper respiratory infection and had had red gums for two or three days. On examination, a large red mass was seen involving the gingiva and the lower right central and left central incisors with apparent displacement by the growth of the tumor (Fig. 5). This was apparently a painless process so far as the child was concerned. There was no history of dental infection or injury to the area. A diagnosis of epulis was made.

On 14 January 1961, he had biopsy of the lower gum. The pathology report showed: "Gross Examination: Specimen con-



Fig. 6. Case 1 - healed mandible showing preservation of permanent teeth with removal of tumor.

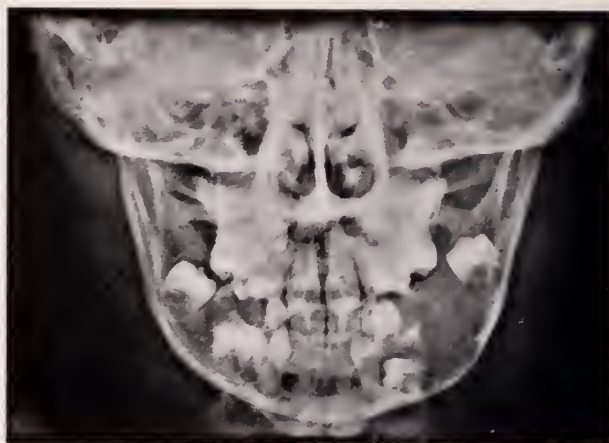


Fig. 8. Case 2 - posteroanterior view of mandible June 1964.



Fig. 7. Case 2 - lateral view of right mandible, June 1964, showing large osteolytic defect with thinning and expansion of cortex of mandible.

sists of four irregular somewhat hemorrhagic bits of material partially covered by mucous membrane and averaging 7 mm. in diameter; no gross diagnostic detail is recognized. **MICROSCOPIC EXAMINATION:** No evidence of malignancy. Mass from gum shows a background of fibroblasts through which are scattered tremendous numbers of multinucleated giant cells; the nuclei are reasonably uniform there is no mitotic activity; the entire lesion is richly vascular and the giant cells closely border the margins of the capillary-like channels throughout. It is difficult to be certain that the lesion has been completely

removed; the picture is entirely consistent with epulis; it is otherwise known as a giant cell reparative granuloma. **DIAGNOSIS:** Mass from gum: Giant cell reparative granuloma (Epulis)."

On 28 February 1961, the tumor was excised with preservation of the teeth. It was possible to largely close the wound with mucosa from the buccal surface of the lip.

The pathology report shows: "DIAGNOSIS: Mass from jaw: Epulis."

He was last seen on 9 March 1964 and at this time he was well healed and there was no evidence of disease (Fig. 6).

**CASE II:** This seven-year-old white girl was first seen on 13 July 1962 with localized swelling in the area of the lower right second deciduous molar. There was no discomfort, and no history of trauma, dental extraction or loss of deciduous teeth. The tissue had the appearance of chronic abscess. X-ray showed a rarefied area extending almost to the lower border of the mandible.

On 18 July 1962, under general anesthesia, the area was incised and a granulation type mass of tissue curetted from the site. It contained a fragment of deciduous tooth. The pathology report was central giant cell reparative granuloma. The patient recovered well and the wound healed without delay. On 11 July 1963, one year later, an intraoral x-ray showed the defect to have decreased considerably in size with some bone regeneration. The patient was to have been seen regularly for routine checks but did not return until 9 months later, when an x-ray showed a marked change with a much larger destructive lesion than the original one.

There was no family history of similar bony tumors of the jaw or long bones. No family history of cancer. A maternal uncle died at 18 months of age of pneumonia. He had rickets.

1 June 1964: Biopsy of mandible was performed under general anesthesia. Pathology report: "Gross Examination: Specimen consists of an irregular mass of tissue approximately 15x10x8 mm. There are small bits of calcium in this specimen. The tissue generally is red-brown in color and uniform in consistency."

"**MICROSCOPIC EXAMINATION:** No evidence of malignancy. Mass from jaw shows a picture identical to the previous biopsy specimen. The specimen consists of multiple multinucleated giant cells embedded in a sea of fibroblastic cells showing no appreciable anaplasia and no mitotic activity. The picture is certainly consistent with an epulis or giant cell reparative granuloma. No other changes were identified. **DIAGNOSIS:** Mass from mandible: Giant cell reparative granuloma."

4 June 1964: X-ray of mandible: There is a large expansive cystic bony defect involving the ramus of the right mandible with several small septa in the lower portion. The changes are





Fig. 9. Case 2 - lateral view of right mandible, May 1966, showing regeneration of bone in periosteum.

consistent with a cystic adamantinoma although the possibility of reticuloendotheliosis or fibrous dysplasia is not excluded (Figs. 7, 8).

5 June 1964: Intraoral resection of the horizontal ramus of the right mandible was performed under general anesthesia. Pathology report: Gross Examination: Specimen consists of a previously bisected segment of mandible which when put together measures 8.5 cm in length. The mid-portion of the specimen shows replacement by an expanding, pale yellow-gray mass. The margin of this mass is free and unencumbered by surrounding bone on one aspect. The cortex of the bone, where it is present, is extremely thin. At least two teeth are associated with this specimen.

MICROSCOPIC EXAMINATION: Mass from mandible shows replacement by tissue entirely similar to that seen on previous biopsies. There are large numbers of multinucleated giant cells in a stroma composed of fibroblasts which are essentially mature in character and show no mitotic activity (Figs. 3, 4). The picture is entirely consistent with an epulis or giant cell reparative granuloma. It also is consistent with benign giant cell tumor of bone. DIAGNOSIS: Mass from mandible: Benign giant cell tumor (see above).

3 July 1964: X-ray: "Mandible: Since the films of 4 June 1964, there has been a resection of the right mandible. Resection of the previously described cystic area appears complete. There is a linear irregular area of calcification along the expected course of the right mandible which suggests beginning regeneration."

26 May 1966: She was well and eating well. She showed slight facial asymmetry. X-ray of mandible: "There has been resection of the right mandible. There is no evidence of active disease. There is some regeneration of a portion of the mandible



Fig. 10. Case 2 - right lateral view of face.

with bone formation in the line of the previous ramus" (Fig. 9).

14 January 1969: She is well and there is no evidence of disease. She has developed marked facial asymmetry (Figs. 10, 11). The left mandible is displaced to the right. She has had no trouble chewing although she has a marked crossbite (Fig. 12). She can and does eat well, and can manage any and all foods. X-ray: "Right mandible: Examination shows slight bony regeneration of the resected portion. However, this is incomplete with two bony gaps in the regenerated portion."

#### DISCUSSION

Although Pare in 1628 recognized epulis, the earliest definitive work on giant cell reparative granuloma was done by Nelaton in 1860. In his extensive monograph he described this tumor in detail (Figs. 1, 2) and related it properly to giant cell tumor of the long bones, emphasized its benign character, and stressed the need for local excisional therapy only. There has been little significant contribution to the literature since his monograph in spite of the appearance of many articles on this subject. Subsequent works have elaborated on and discussed this problem and it now appears that central giant cell reparative granuloma, peripheral giant cell reparative granuloma and aneurysmal bone cyst are histologically identical and are entirely similar in their natural history. They are also histologically identical with giant cell tumor of the long bones but differ in natural history from





Fig. 11. Case 2 – Front view of face showing marked facial asymmetry.

these lesions which are often aggressive malignancies. The giant cell tumor known as a "brown tumor" associated with hyperparathyroidism is microscopically indistinguishable from giant cell reparative granuloma but the associated clinical picture is quite different; and is diagnostic of this syndrome.

The difference in clinical behavior between giant cell reparative granuloma and giant cell tumor of the long bones is possibly due to differences in the bed in which the tumor grows. It has been shown that tumors which are similar microscopically behave in different ways clinically, and that this behavior is to some extent related to the site in which they are located. It is thought by some that central giant cell reparative granuloma appears most commonly in areas of injury or trauma which explains their increased incidence in the mandible and maxilla of the 0 to 20 age group as this is the group most commonly subjected to the trauma of changes of dentition, extraction and other physical forces. The presence of quantities of blood cells in the tumor in no way changes the underlying characteristic of the tumor and we consider the term "giant cell reparative granuloma" preferable to that of aneurysmal bone cyst.

The cases reported fit the usual picture of giant cell



Fig. 12. Case 2 – showing bite at rest revealing marked shift to right of mandible.

reparative granuloma – a boy age five had a typical peripheral giant cell reparative granuloma with good result from local excision without cauterization and with preservation of his permanent dentition. This was possible as the lesion did not surround the teeth but involved only their buccal surfaces. A girl age seven who had had recurring trouble with her mandible was ultimately treated by intraoral excision of a large segment of the mandible, revealing penetration of the bony cortex by the tumor. It was possible to preserve the periosteum of one part of this mandible and this has subsequently developed considerable calcification. Recovery was complete and the patient has been well and free of disease for six years. Prior to this extensive operation, she had one episode of recurrence following curettage of the lesion. The histologic diagnosis at the time of this initial treatment was central giant cell reparative granuloma.

#### CONCLUSIONS

1. Central giant cell reparative granuloma, peripheral giant cell reparative granuloma, aneurysmal bone cyst and giant cell tumor are microscopically indistinguishable, although the natural history of giant cell tumor may be clinically different.
2. Giant cell reparative granulomas are benign lesions. Giant cell tumors of long bones are often aggressive malignant tumors.
3. Curettage and electrocoagulation is the therapy of choice for giant cell reparative granuloma.
4. These tumors recur if incompletely removed.
5. At times, partial resection of the mandible may be necessary in cases of central giant cell reparative granuloma involving this bone.

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# Diabetic Retinopathy

KEVIN HILL, M.D.

Diabetic retinopathy is now one of the most important causes of blindness in the world. Recent studies indicate that it may be the third most frequent cause of blindness in the United States and Great Britain; others have suggested that it is already the leading cause of blindness in this country.<sup>1</sup> It is fair to say that the increasing incidence of blindness as a result of diabetic retinopathy presents us with a public health problem of major proportions. It is therefore important that we combat this problem not only by early recognition and appropriate treatment of diabetes mellitus but also by detection of the retinopathy in its earliest stages. If there were no treatment for diabetic retinopathy then the early diagnosis of the condition might be of somewhat academic significance; however, it is felt that there are forms of treatment available which may be efficacious. For these reasons, it is the purpose of this paper to review the incidence and clinical features of diabetic retinopathy and to discuss the currently available forms of treatment.

## INCIDENCE OF DIABETIC RETINOPATHY

Cogan<sup>2</sup> has stated that more than half of the diabetic patients now living have a related retinopathy and of these one or two percent have a progressive form that will relentlessly lead to blindness. He noted that approximately 10% of all blindness in the U.S. is due to diabetes and emphasized that many of the patients so afflicted are young adults, a fact which reinforces the socioeconomic and emotional problems that this disease presents. Other authors indicate that the incidence of blindness due to diabetic retinopathy varies from 4 to 18 percent (Table 1). Females are affected more frequently than males, thereby reflecting the sex incidence of diabetes.

## CLINICAL FEATURES OF DIABETIC RETINOPATHY

Diabetic retinopathy may be divided into two basic clinical types (Table 2): 1) "Background" retinopathy consists of hemorrhages, exudates, abnormalities of retinal veins and changes in the capillaries consisting of microaneurysms and the development of shunt vessels. 2) Proliferative retinopathy in the early stages consists of the formation of new blood vessels with the subsequent growth of fibrous or glial tissue which may lead to vitreous hemorrhage and retinal detachment.

The pathologic basis for the clinical manifestations of diabetic retinopathy is somewhat speculative but appears to be a retinal vasculopathy which affects the capillaries primarily. There appears to be increased accumulation of the basement membrane material of the capillaries. This accumulation of a carbohydrate-containing protein is related to the degree of metabolic disturbance. Also observable is the loss of mural cells from the capillary walls.

TABLE 1

INCIDENCE OF BLINDNESS DUE TO DIABETIC RETINOPATHY		
Place	Date	Diabetic Retinopathy as Percent of blindness
Massachusetts	1953	18
California	1955	4
20 States of U.S.	1957	8.5
New York	1957	17

Data from Margolin, M.: Management of the blind diabetic, Postgrad. Med. 26: 681, 1959.

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TABLE 2

CLINICAL FEATURES OF DIABETIC RETINOPATHY
1. Microaneurysms.
2. Abnormalities of retinal veins.
3. Hemorrhages — almost always accompanied by exudates or aneurysms.
4. Exudates — "hard" and "soft."
5. New vessels.
6. Glial proliferation.
7. Vitreous detachment — leading to retinal detachment.

These cells are thought to maintain retinal capillary tone and presumably effect uniform distribution of blood throughout the vascular bed. The affected blood vessel walls become abnormally permeable and leak intravascular components such as red blood cells and plasma which accumulate within the retinal tissue. Occlusion of the capillaries may at first be reversible by capillary repair but later leads to micro-infarcts which are clinically evident as soft exudates or "cotton wool" spots. This capillary closure may result in the development of so-called "shunt" vessels and also stimulate neovascularization. Degeneration of the retinal tissue leads to accumulation of fatty deposits which are ophthalmoscopically visible as hard or waxy exudates. Characteristically the changes of background retinopathy are more prominent in the posterior pole of the eye. When the macula is involved, central vision may be seriously compromised.

The proliferation of new vessels usually begins within the substance of the retina and then spreads out upon its inner surface. If vitreous detachment or liquefaction occur, the neovascular process may extend into the vitreous cavity. Initially, there is little or no accompanying perivascular fibrous tissue and these thin-walled vessels may bleed easily, giving rise to pre-retinal and vitreous hemorrhages. Organization of such hemorrhages may exert traction upon the retina with production of retinal detachment. The proliferation of fibrous or glial tissue around the newly formed vessels may ultimately obliterate them thus decreasing the likelihood of hemorrhage.



Indeed, Beetham<sup>3</sup> reported spontaneous arrest of the "malignant" type of retinopathy in 10 percent of 350 patients.

The different elements of diabetic retinopathy outlined above may come and go over variable periods of time. It is obvious, therefore, that evaluation of treatment must be careful and mindful of such "spontaneous" changes.

In clinical examination for diabetic retinopathy, direct white-light ophthalmoscopy is most commonly used. It is important to realize that even in patients with minimal diabetic retinopathy noted by ophthalmoscopy, the disorder of the retinal vasculature may be widespread. Pathologic examination of flat mount preparations of retinas from diabetic patients may reveal many more microaneurysms and other changes than have been observed ante-mortem by ophthalmoscopy.

Dilatation of the pupil will facilitate visualization of the fundus and the use of red-free light may be of some help in detecting small microaneurysms and small hemorrhages. More helpful has been the use of fluorescein angiography. This technique consists of the intravenous injection of a solution of sodium fluorescein and observation of the retina through a cobalt filter. The appearance of the fluorescent dye in the arterioles, its subsequent distribution throughout the capillary system and return through the veins, may be photographed for permanent records.<sup>4</sup> This technique may reveal many more microaneurysms and capillary abnormalities than regular ophthalmoscopy and in addition may show impaired blood flow and increased permeability of the diseased vessels. Fluorescein is loosely bound to plasma protein and normally remains within blood vessels. In diabetes, however, the fluorescein may leak out of the vessels, both old and newly formed, demonstrating these areas of abnormal vascular permeability. The localization of these vascular leaks is important if the retinopathy is to be treated by photocoagulation as will be discussed subsequently.

#### TREATMENT

It is generally accepted that careful medical regulation of diabetes mellitus will delay the onset of clinically observable retinopathy. It has been suggested<sup>5</sup> that good control of diabetes may prevent or slow the accumulation of the abnormal glycolipid material in the basement membrane of the retinal capillaries and thus delay the development of the vasculopathy. Once the vessels have reached a certain level of abnormality, the sequelae of hemorrhage and exudation may progress regardless of good control of the metabolic disorder. This latter point is less certain since recent studies seem to indicate that careful medical management of the diabetes may also slow the progression of retinopathy once it is manifest.<sup>6</sup> It seems clear that if good control of diabetes will delay the onset of retinopathy then it is imperative that diabetics be detected early in the course of their disease. It is a sobering thought to realize that possibly half of the 3 to 5 million diabetics in the U.S. are at present unrecognized and undiagnosed.

TABLE 3

TREATMENT OF DIABETIC RETINOPATHY	
A.	Androgenic and non-androgenic anabolic steroids.
B.	Reduction of blood lipids.
1.	Low fat diets
2.	Clofibrate
3.	Para-amino-salicylic acid
C.	Adrenalectomy.
D.	Pituitary ablation.
E.	Local treatment of intraocular neovascularization.
1.	Radiation
2.	Photocoagulation
3.	Laser coagulation
F.	Miscellaneous measures.
1.	Rutin
2.	Lipotropic agents
3.	Vitamin B <sub>12</sub>
4.	Anticoagulants
5.	Fructose
6.	Topical steroids

TABLE 4

METHODS OF PITUITARY ABLATION	
1.	Surgical Hypophysectomy.
a.	Transfrontal
b.	Transsphenoidal
2.	Hypophyseal stalk section.
3.	Destruction of anterior lobe of pituitary.
a.	Radio-frequency current
b.	Cryo-probe
4.	Irradiation.
a.	Implantation of Yttrium - 90
b.	Bragg peak proton beam
c.	Alpha particles.

TABLE 5

CRITERIA FOR PITUITARY ABLATION	
1.	Presence of macular function in at least one eye.
2.	Presence of documented progressive retinopathy.
a.	Exudates alone not enough
b.	Fibrous proliferation felt by some to be a contraindication since it leads so frequently to secondary retinal detachment
3.	Good renal function.
4.	Psychologic ability to handle hypopituitarism.

The treatment of diabetic retinopathy has been extremely varied (Table 3). Of the many medicines which have been recommended for the treatment of diabetic retinopathy, none can be said to be helpful. The lowering of plasma lipids by PAS and Clofibrate may cause disappearance of the hard exudates within the retina, but since these exudates are formed by degenerating retinal neuronal elements there is no concomitant improvement in vision.

Of the surgical modalities used for the treatment of diabetic retinopathy, pituitary ablation and photocoagulation of the retina have been subjected to fairly extensive trials. Both techniques appear to have had beneficial effects in selected cases. Their potential usefulness for diabetic patients with retinopathy warrants more detailed consideration.

### PITUITARY ABLATION

The fortuitous observation of reversal of diabetic retinopathy in a patient who had spontaneous necrosis of the pituitary led to the investigation of pituitary ablation as a treatment. The pituitary gland may be removed surgically or destroyed by radiation (Table 4). Although the mechanism by which destruction of the pituitary ameliorates diabetic retinopathy is not known, criteria for its use have been devised (Table 5). It is obvious that this procedure is limited to a small percent of patients with diabetic retinopathy.

The results of several studies<sup>7</sup> indicate that pituitary destruction is mainly helpful in reversing the angiopathic (i.e., the vascular, non-fibrous) components of diabetic retinopathy. It is not effective in clearing hard exudates or gliosis. Although most of these studies were uncontrolled, they indicate that the retinopathy may be halted or ameliorated in the majority of the limited number of patients who meet the criteria for pituitary ablation. The two studies which were controlled provide more convincing evidence of the efficacy of this treatment.

The obvious drawbacks to pituitary ablation are the mortality and morbidity of the ablative procedures. In the direct surgical approaches to the pituitary gland, a low incidence of mortality must be expected. The irradiation procedures have essentially no direct mortality risk. The morbidity includes complications arising from derangement of fluid and electrolyte balance and the other metabolic problems associated with the post-operative hypopituitarism. The management of these patients may be quite difficult. Cerebrospinal fluid rhinorrhea, meningitis, wound infections, visual field defects and extraocular muscle palsies have also been reported.<sup>8</sup> A complication that is peculiar to the irradiation methods for pituitary destruction is the progression of the retinopathy in the several months lag between the time of treatment and the development of the hypopituitary state.

#### *Photocoagulation*

Photocoagulation has been used in the treatment of diabetic retinopathy for approximately 15 years. The rationale for this therapy has been variously explained but there are two basic schools of thought. One is that the abnormal vessels should be destroyed to prevent hemorrhage and exudation which impairs the vision, especially macular vision. The other theory is that large areas of the peripheral retina should be destroyed to decrease the overall metabolic requirement of the retina and thus decrease the stimulus for neovascular activity. Both approaches have been reportedly successful in ameliorating the course of proliferative diabetic retinopathy.<sup>9</sup>

The xenon-arc photocoagulator is used most commonly to treat specific areas of abnormal blood vessels while the ruby laser has been used to destroy peripheral retina. The red wavelength of the ruby laser is not well absorbed by

hemoglobin so it is not suitable for coagulating blood vessels. Recently, however, an argon laser has been developed which does permit direct treatment of the vessels and may be focussed anterior to the retina so that intravitreal vessels may be coagulated.

All photocoagulation of diabetic retinopathy is, of course, dependent upon the existence of clear ocular media. Vitreous hemorrhage must clear and cataract of significant degree must be removed before photocoagulation can be performed. Fluorescein angiography is valuable in localizing the vascular leaks before treatment. The laser may be used without retrobulbar anesthesia in most cases but the xenon-arc photocoagulator usually requires retrobulbar anesthesia to prevent thermal discomfort and inadvertent coagulation of the macula. The other complications of photocoagulation include vitreous hemorrhage, retinal hemorrhage, retinal detachment, optic atrophy, visual field defects and cataract.

### COMMENT

It is obvious that we are limited in our ability to treat successfully diabetic retinopathy. Pituitary ablation is applicable to only a small number of cases and it imposes upon them the many problems associated with the hypopituitary state. Photocoagulation is more widely applicable and does not carry the morbidity of pituitary ablation but it still is of little or no value in treating fibrous proliferation, neovascularization of the disc, vitreous hemorrhage and hard macular exudates. It is in the early stages of neovascular retinopathy that these two forms of treatment are most successful. It follows that early detection of the retinopathy is vital if our patients are to benefit from our present "stop-gap" forms of therapy.

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# Vascular Tumors of the Neck

JOHN T. CHEN, M.D.\*

The current trend in clinical diagnosis has been to obtain more precise information in regard to etiology and location of lesions. This is particularly true in radiology. Arteriography in selected instances can provide useful and precise information regarding the extent and probable etiology of the lesion. Although tumors can be detected from displacement and encroachment of vascular structures, most helpful situations are those vascular tumors which can readily be identified by arteriography as to the size of the lesion and the presence of abnormal blood supply. This is helpful in planning the modality of the treatment and providing pre-operative knowledge of the vasculature.

During the past year at Thayer Hospital, we had occasion to study a number of lesions in the cervical region. Three illustrative cases of vascular tumors of the neck, ranging from moderately vascular to extremely vascular in nature, are presented with brief discussion of the clinical course and treatment.

## CASE PRESENTATIONS

### Case No. 1:

L.T., age 58, male, was first admitted to the hospital in November 1969 with a history of several attacks of ureteral calculi which were spontaneously passed without surgical intervention. Routine SMA-12 profile showed findings suggestive of hyperparathyroidism with elevation of alkaline phosphatase, serum calcium and a low serum phosphate level. Patient was readmitted in January 1970 for re-evaluation of primary hyperparathyroidism. Several repeat SMA-12 studies showed persistence of the changes previously mentioned. Twenty-four hour urine for calcium and phosphorous excretions were consistently elevated on three separate occasions averaging 750 mg. of calcium and 1400 mg. of phosphorous respectively.

Skeletal survey x-rays were negative. Arteriograms were performed on January 20, 1970 with selective injection of the thyrocervical trunk on the left demonstrating a normal vascular pattern (Fig. 1). Arteriogram on the right side demonstrated increased vascularity and a small abnormal branch of inferior thyroid artery supplying a small area of vascular flushing in the capillary phase just above the clavicle which was suggestive of hyperthyroid adenoma (Fig. 2). Patient was explored on April 15, 1970. An adenoma measuring 1.5 x 2 cm. was removed corresponding to the area of vascular flushing. Two normal parathyroid glands were identified on the left side. Patient had a relatively benign post-operative course, and the calcium level was controlled by intravenous and oral supplement. There was no hypocalcemic crisis, and the patient was discharged on the seventh postoperative day.

In the radiological literature, the initial attempt for diagnosis of parathyroid adenoma was based on displacement of the loop of the inferior thyroid artery<sup>(1)</sup> which, although useful to identify the site of the lesion, was found to be rather crude and had a relatively low index of accuracy. Subsequent application of selective injection and subtraction techniques<sup>(2)</sup> demonstrated parathyroid tumors in a substantially high number of cases especially if over 1 cm. in size. The current widespread use



Case No. 1, Fig. 1. Arteriogram of the left thyrocervical trunk shows a normal inferior thyroid artery.



Case No. 1, Fig. 2. Subtraction film on the right reveals a tumor stain in the lower neck (arrows).

\*Department of Radiology, Thayer Hospital, Waterville, Maine 04901.





Case No. 2, Fig. 3. Lateral view depicts a large internal maxillary artery supplying the tumor.



Case No. 2, Fig. 4a. Lateral view.

of screening chemistry by automated laboratory tests increases the likelihood that parathyroid tumors could be diagnosed in an earlier stage than in the past. Arteriography could be useful to confirm the presence and location of the tumor preoperatively.<sup>(3)</sup>

#### Case No. 2:

D.B., a 16-year-old male, was readmitted to the hospital in September 1970 because of recurrence of juvenile angiofibroma of the nasal pharynx. Patient had previous local resection in August 1968 and January 1969. He had several episodes of nose bleeding in July and August of 1970, and a mass was found in the right choana.

On August 17, 1970, a percutaneous catheter right brachial arteriogram was performed. A highly vascular tumor was found in the right posterior nasal fossa with enlargement of the internal maxillary artery and multiple small vessels supplying the tumor (Fig. 3) which measures approximately 3 x 4 cm. in size (Figs. 4a and 4b). The lesion was excised by trans-maxillary approach with temporary clamping of the external carotid artery during surgery. The patient was discharged on the sixth day postoperatively.

Juvenile angiofibroma of the nasal pharynx is a relatively uncommon benign tumor which grows by local extension, often resulting in severe hemorrhaging due to the extremely vascular nature of the tumor. Although clinical diagnosis could be readily made pre-operatively, arteriography was found to be useful in more precise delineation of the extent of the tumor and also degree of vascularity and presence of abnormal feeding vessels<sup>(4)</sup> so that a more complete removal could be made to prevent further recurrence.

#### Case No. 3:

H.P., a 64-year-old female, initially seen at the Thayer Hospital Tumor Clinic in April 1968 because of bilateral masses in the neck for over 30 years. These had grown considerably in the past several years, especially on the left side, with encroachment on the pharynx and the external auditory canal. A



Case No. 2, Fig. 4b. A-P View. The tumor is well outlined during the capillary phase (arrows).

clinical diagnosis of chemodectoma (carotid body tumor) was made on the basis of clinical course and strong family history. She was seen again on August 25, 1970 with some increase in the airway encroachment. Because patient refused hospital admission, an aortic arch arteriogram was done on September 2, 1970 as an out-patient and bilateral vascular tumor was demonstrated, especially on the left, which was huge in size extending from the level of the ear to the larynx and highly vascular



Case No. 3, Fig. 5. A-P view shows bilateral lateral displacement of the common carotid arteries and a large thyro-cervical trunk on the left with wormy pool of arteries.



Case No. 3, Fig. 6. Left oblique projection demonstrates dense opacification of tumor on the right and a widened carotid bifurcation. Extreme vascularity on the left is again seen.

(Figs. 5 and 6). Abnormal vasculature was seen arising from the thyro-cervical trunk, external carotid, and some abnormal branches from the vertebral artery. From the arteriographic findings it was obvious that even a biopsy would be extremely hazardous, and it was suggested that x-ray therapy be tried to control the vasculature and possibly reduce the size of the tumor which was producing physical encroachment on the ear and the pharynx. There were ample articles in the literature referring to demonstration of carotid body tumor<sup>(5)</sup> and surgical removal; however, this case seemed to be extraordinary in respect to the size and degree of the vascularity and points out the value of arteriography in demonstrating the hazard of surgery or biopsy in this type of situation which could easily lead to uncontrollable bleeding.

#### DISCUSSION

Arteriography has been well established as a diagnostic procedure for cerebral pathology, ischemic lesions, and renal vascular diseases. With recent more widespread application, it has been useful in diagnosis of certain gastrointestinal tumors and obscure gastrointestinal hem-

orrhages, pulmonary embolism and various tumors in the trunk and extremities. The cases of vascular tumor in the cervical region represent a small segment in this expanding field of radiology.

A short list of bibliographies is presented and liberal cross references can be found in these articles.

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325B Kennedy Mem. Dr., Waterville, Maine 04901

# Laryngograms — Their Value in a Central Regional Center

FRANK S. CRUICKSHANK, JR., M.D.\* and LORING W. PRATT, M.D.\*\*

## INTRODUCTION

Accurate delineation of the margins of a malignancy of the larynx is essential to proper planning of therapy. Contrast laryngography is a useful tool in this preoperative evaluation.

X-ray contrast examination of the larynx is not a new procedure. Powers, McGee, and Seaman published a detailed report of the technique in 1957.<sup>1</sup> Clinically oriented articles by Ogura, Powers et al in 1960<sup>2</sup> as well as later articles by Lehman and Fletcher,<sup>3</sup> have established the laryngogram as a supplement to direct and indirect laryngoscopy in the management of tumors of the larynx. This technique is also useful in the diagnosis of benign laryngeal lesions, such as vocal cord paralysis, webs, pharyngoceles, etc.

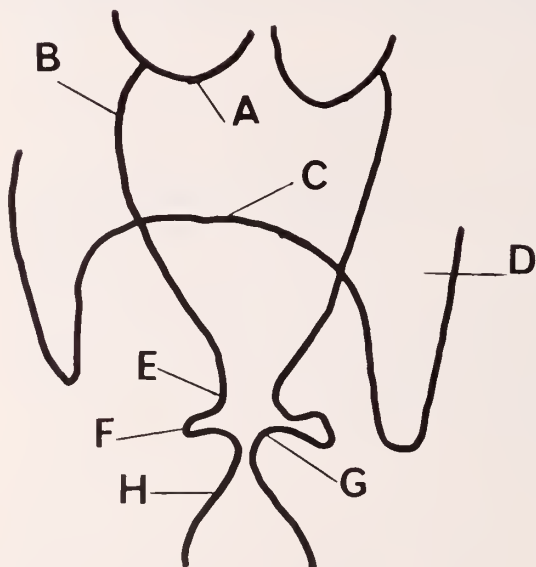
Over the past year, we have performed approximately twenty-six laryngograms primarily as part of the work-up for patients with suspected tumors within or adjacent to the larynx.

## TECHNIQUE

The technique employed is essentially that described by Powers and Seaman. The patient is premedicated with 1½ grains of Nembutal® and 1/150 grains of Atropine. For topical anesthesia, we use 5% Cyclaine® sprayed upon the oropharynx and hypopharynx. Oily Dionisil is dripped over the base of the tongue through a curved cannula. Anterior, posterior and lateral spot films are then obtained during quiet inspiration (cords abducted), phonation (cords adducted), valsalva, and modified valsalva maneuvers. So far as possible, the examination is done before biopsy to avoid distortion caused by local edema.

## ABBREVIATED RADIOLOGIC ANATOMY

A. Typical AP view with cords adducted.



Vallecula (A), aryepiglottic fold (B), postcricoid line (C), pyriform fossa (D), false cord (E), laryngeal ventricle (F), true cord (G), and subglottic angle (H).

\*Department of Radiology, Thayer Hospital, Waterville, Maine 04901.

\*\*Chief, Department of Otolaryngology, Thayer Hospital, Waterville, Maine 04901.

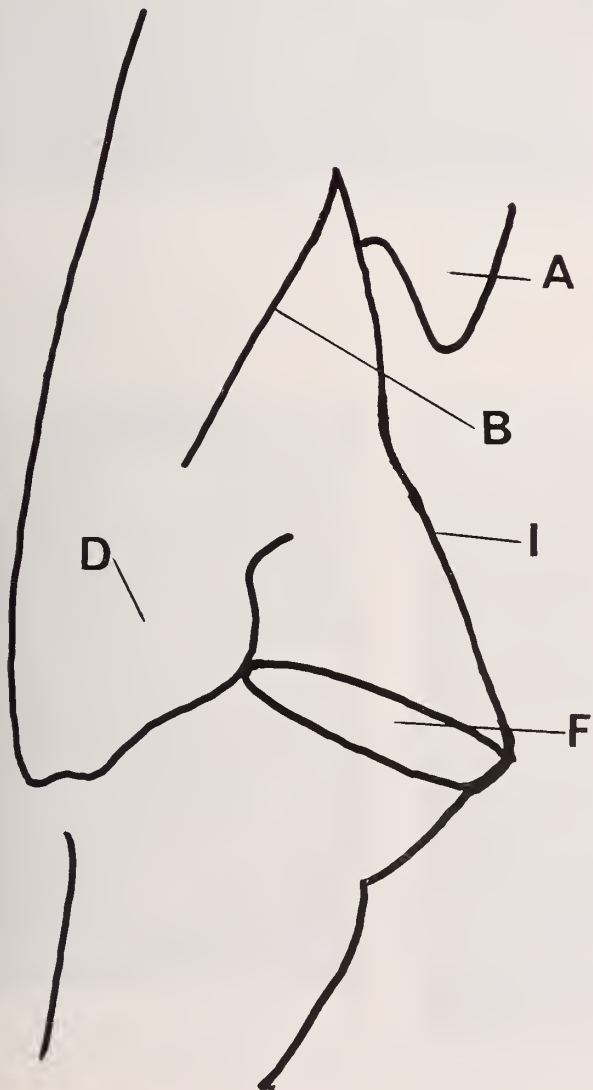


3. AP view in quiet inspiration.



Vocal cords are abducted collapsing the laryngeal ventricles (F).

C. Typical lateral view.



Vallecula (A), aryepiglottic fold (B), pyriform fossa (D), laryngeal ventricle (F), and ventral surface of epiglottis (I).

## CASE PRESENTATIONS

*CASE 1:* This is a 53-year-old white male with clinical evidence of a carcinoma of the left true cord.



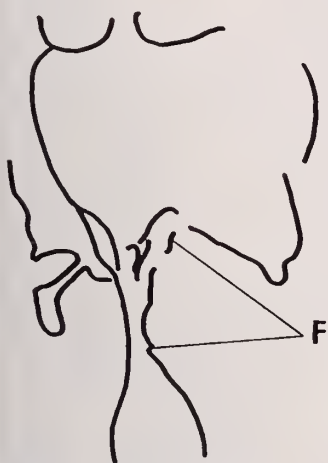
Tumor is limited to the true cord (G). Note enlargement of the true cord. Defect on the film is an artifact.

*CASE 2:* This is a 46-year-old white male with endoscopic evidence of carcinoma of the right true cord extending into the ventricle and subglottic space, with involvement of anterior commissure.



Tumor originates in the area of the true cord (G), replaces the ipsilateral ventricle, and extends into the subglottic space. It crosses the midline.

**CASE 3:** This is a 75-year-old white male with extensive transglottic carcinoma of the larynx which crosses the midline.



Tumor (F) involves left side of glottis, is transglottic and crosses the midline.

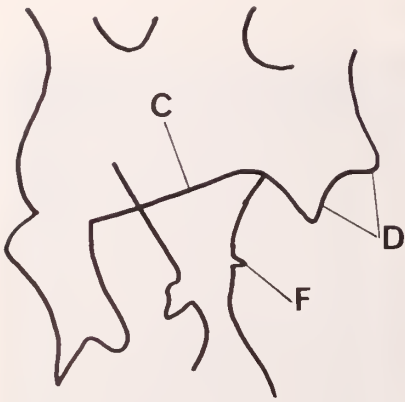
**CASE 4:** This is a 57-year-old white male with typical endoscopic and radiologic findings of a malignant polypoid tumor which had a transglottic distribution and crossed the midline. Biopsy revealed multiple benign polyps.



Large tumor (F) which probably originates from the true cords. It extends beyond the glottis and crosses the midline. The lack of mucosal destruction probably should have suggested a benign lesion.



CASE 5: This is a 66-year-old white male with carcinoma of the left pyriform fossa with metastases to the cervical nodes.



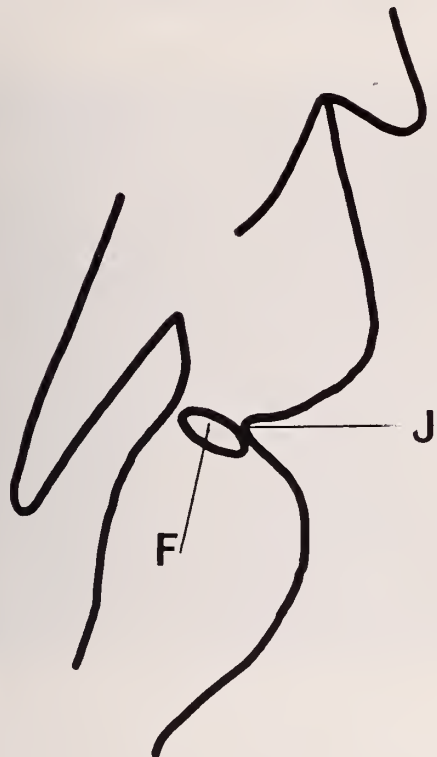
There is elevation and stretching of the postcricoid line (C) as well as of the left laryngeal ventricle (F). Note the filling defect within the left pyriform fossa (D).

CASE 6: This is a 64-year-old white male with cancer of the epiglottis with local extension to the pyriform fossa.



The bulk of the tumor (I), involves the entire epiglottis and extends into the pyriform fossa (D).

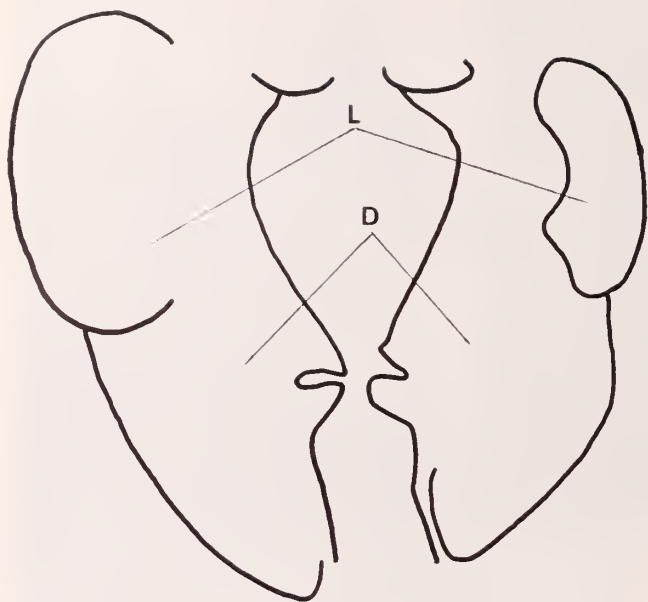
CASE 7: This is a 42-year-old white female mongoloid with a congenital anterior laryngeal web. She has been hoarse since birth.



The laryngeal ventricle (F) is foreshortened anteriorly by the web in the region of the anterior commissure. Note the persistent indentation of the fused anterior commissure of the vocal cords (J).

CASE 8: This is a 19-year-old white, male, trumpet player who has noted progressive bilateral bulging and pain in his neck as well as headaches over the past year. All of these symptoms and signs occur after prolonged playing of the high register.





The upper film, obtained in quiet inspiration, shows a normal appearance of the intrinsic larynx and pyriform fossae (D). The lower study filmed during a valsalva maneuver shows massive dilatation of the pyriform fossae (D) due to a large pharyngocoele.

#### RESULTS

Our findings were checked by direct laryngoscopy, biopsy when indicated, and, whenever possible, by comparison with the gross specimen removed at surgery.

Eighteen cases were referred for possible tumors of the larynx or adjacent structures. One patient is excluded because of an extreme gag reflex which precluded any adequate clinical or radiographic examination. This patient signed out of the hospital against medical advice. Three cases showed normal clinical and radiographic findings. There were three tumors of the epiglottitis, four tumors of the pyriform fossae, six tumors of the true cords, and one tumor of the base of the tongue.

Several cases were referred for benign conditions of the larynx. Two of these cases are reported in this article.

#### CONCLUSION

We feel that laryngograms offer a valuable supplement to indirect and direct laryngoscopy in the management of benign and malignant lesions of the larynx. While we include soft tissue and body section radiography in our radiographic work-up, it is our impression that the laryngogram offers superior detail in most cases.

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# Taking the Pecking Order Out of Maine's Health Planning

BURT C. SHEEHAN\*

While our congress seems to strive to maintain its unrealistic archaic pecking order system, regional planning efforts in Maine are geared to the development of a logical scientific methodology of the health planning process. With its problems of unequal distribution of health manpower and facilities, Maine can no longer condone its present delivery system of medical care. Brilliant foci of health care can be found in many of our communities but far too often it's a case of too little and years too late. Consumer apathy – fed by decades of low expectations – has resulted in the continued receding of quality medical care for many of our rural poor. Hospitals with their supporting medical and lay leadership have far too often failed to assume the role of regional planner of health care. Little or no effort has been made to coordinate efforts to supply the spiraling demands made on the system.

The passage of PL89-749 and the creation of organizations born under its sections 134 (a) and 314 (b) have breathed new life and expectation into sensible and logical re-allocation of services, development of allied health professionals and positive new directions for the provision of quality health care. PL 89-239 has also created organizations such as Maine's Regional Medical Program and its dynamic force for directing the newer thrusts of medical care into the much slower changing patterns of the delivery of Maine medicine to our rural regions.

One of the new organizations on the scene, Kennebec Valley Regional Health Agency, in Waterville has taken bold steps to utilize some of the new tools available to health planners of the 70's.

The Agency, an operational program of Maine's Regional Medical Program, has undertaken a project which will give its Board of Directors and staff a planning tool unique in the nation.

Kennebec Valley Regional Health Agency decided that six elements were an integral part of their planning efforts: (a) identification of problems or needs utilizing available data, (b) locate available resources, (c) establish priorities, (d) plan and promote programs, (e) locate the appropriate vehicle to implement if future activity is indicated, and (f) evaluate results. Having defined these six elements the project called a "Systems

Analysis for Developing a Coordinated Comprehensive Medical Care Program" was undertaken. The project will:

1. Develop comprehensive health data base for health and social planning.
2. Do an in-depth systems analysis of this data.
3. Develop simulation models of the health system of the Valley.
4. Develop computer programs for the assimilation of the data and control of the simulation models.
5. Develop and train personnel in the use of computerized models for health care planning.

This system is designed to be flexible so that it may be used in other regions of the state for health care planning. The Agency feels this project will set the stage for true science in planning which will be useful to all. A properly constructed model is an extremely flexible and useful device. Model inputs can be systematically and easily changed to test any desired combinations of system parameters and input variables. Model outputs are useful for answering specific questions about the system. Outputs are useful for system design optimization and system evaluation and to provide a comprehensive picture of the system and system performance.

In a viable system, evaluation and planning are essential parts of management. Evaluation is often called the process of determining whether a system has reached or is directed toward its goals. Planning is the process of keeping the system relevant to the population to be served by defining goals and identifying alternatives for reaching these goals – without identifiable and publicly shared goals, planning and evaluation do not exist.

Essential in systems planning and evaluation is decision making. People often expect planning to be the domain of research experts, but researchers can act only as supporters, designers, mechanics, or engineers; they are *NOT* the primary element. The Agency Board and its committees *are* the decision makers.

However correct the decisions, however accurately devised, true regional planning will succeed only when all elements of the system accept publicly shared goals and mutually acceptable decisions and move out of the dark bastions of vested interests into the warm glow of success – a health care system designed to bring quality health care to all of Maine's citizens, Kittery to Calais – quality medicine for those in need.

\*Executive Director, Regional Health Agency, Upper Kennebec Valley, Waterville, Maine 04901.



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Depression is a 24-hour-a-day problem. And insomnia is often its nocturnal expression. In fact, insomnia may be a key symptom in establishing the diagnosis of depression.

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**NOTE:** Not recommended during the acute recovery phase following myocardial infarction. Patients with cardiovascular disorders should be watched closely; arrhythmias, sinus tachycardia, and prolongation of the conduction time have been reported, particularly with high doses; myocardial infarction and stroke have been reported with drugs of this class. Close supervision is required for hyperthyroid patients or those receiving thyroid medication. Concurrent electroshock therapy may increase the hazards of therapy; such treatment should be limited to patients for whom it is essential. Discontinue the drug several days before elective surgery if possible.

**Contraindications:** Known hypersensitivity. Should not be given concomitantly with or within at least 14 days following the discontinuance of a monoamine oxidase inhibitor. Then initiate dosage of amitriptyline HCl cautiously with gradual increase in dosage until optimum response is achieved. Not recommended during the acute recovery phase following myocardial infarction or for patients under 12 years of age.

**Warnings:** May block the antihypertensive action of guanethidine or similarly acting compounds. Should be used with caution in patients with a history of seizures or urinary retention, or with narrow-angle glaucoma or increased intraocular pressure. Patients with cardiovascular disorders should be watched closely; arrhythmias, sinus tachycardia, and prolongation of the conduction time have been reported, particularly with high doses; myocardial infarction and stroke have been reported with drugs of this class. Close supervision is required for hyperthyroid patients or those receiving thyroid medication. May impair mental and/or physical abilities required for performance of hazardous tasks, such as operating machinery or driving a motor vehicle. Safe use during pregnancy and lactation has not been established; in pregnant patients, nursing mothers, or women who may become pregnant, weigh possible benefits against possible hazards to mother and child.

**Precautions:** When used to treat the depressive component of schizophrenia, psychotic symptoms may be aggravated; in manic-depressive psychosis, depressed patients may experience a shift toward the manic phase, and paranoid delusions, with or without associated hostility, may be exaggerated; in any of these circumstances, it may be advisable to reduce the dose of amitriptyline HCl, or to use a major tranquilizing drug, such as perphenazine, concurrently.

When given with anticholinergic agents or sympathomimetic drugs, close supervision and careful adjustment of dosages are required. May enhance the response to alcohol and the effects of barbiturates and other CNS depressants. The possibility of suicide in depressed patients remains during treatment and until significant remission occurs; this type of patient should not have easy access to large quantities of the drug. Concurrent electroshock therapy may increase the hazards of therapy; such treatment should be limited to patients for whom it is essential. Discontinue the drug several days before elective surgery if possible.

**Adverse Reactions:** *Note:* Included in this listing are a few adverse reactions not reported with this specific drug. However, pharmacological similarities among the tricyclic antidepressant drugs require that each reaction be considered when amitriptyline is administered.

**Cardiovascular:** Hypotension, hypertension, tachycardia, palpitation, myocardial infarction, arrhythmias, heart block, stroke. **CNS and Neuromuscular:** Confusional states; disturbed concentration; disorientation; delusions; hallucinations; excitement; anxiety; restlessness; insomnia; nightmares; numbness, tingling, and paresthesias of the extremities; peripheral neuropathy; incoordination; ataxia; tremors; seizures; alteration in EEG patterns; extrapyramidal symptoms. **Anticholinergic:** Dry mouth, blurred vision, disturbance of accommodation, constipation, paralytic ileus, urinary retention, dilatation of urinary tract. **Allergic:** Skin rash, urticaria, photosensitization, edema of face and tongue. **Hematologic:** Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia. **Gastrointestinal:** Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, parotid swelling. **Endocrine:** Testicular swelling and gynecomastia in the male, breast enlargement and galactorrhea in the female, increased or decreased libido. **Other:** Dizziness, weakness, fatigue, headache, weight gain or loss, increased perspiration, urinary frequency, mydriasis, drowsiness, jaundice. **Withdrawal Symptoms:** Abrupt cessation of treatment after prolonged administration may produce nausea, headache, and malaise; these are not indicative of addiction.

**How Supplied:** Tablets containing 10 mg and 25 mg amitriptyline HCl, in single-unit packages of 100 and bottles of 100, 1000, and 5000; tablets containing 50 mg amitriptyline HCl, in single-unit packages of 100 and bottles of 100 and 1000; for intramuscular use, in 10-cc vials containing per cc: 10 mg amitriptyline HCl, 44 mg dextrose, and 1.5 mg methylparaben and 0.2 mg propylparaben as preservatives.

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COMMISSIONER

## State Of Maine

# Department of Health and Welfare

## Fluoridation or Dental Manpower

ALONZO H. GARCELON, D.D.S.\*

Dental caries continues to be one of the most prevalent and widespread diseases. It is, in fact, the primary health problem in Maine.<sup>1</sup> Reduction of the incidence of dental caries is a slow process, but one which takes its route with a statewide effort to secure fluoridation of public water supplies.

There are four methods or combinations of methods which, on a long-range basis, are available to reverse the negative status of dental health. Three of these have been developed and employed by the State Department of Health and Welfare in an attempt to reduce the dental needs of Maine.

The first alternative considered and activated by state health officials was the recruitment of practicing dentists since the state suffers from a severe shortage of dentists — an average of one dentist per 3500 population. The national average estimated by the American Dental Association is one dentist per 1703 persons. One indication of success in this effort is the number of applications filed with the State Board of Dental Examiners — 1969-70 three applicants, 1970-71 (to date 1-1-70) thirty-seven applicants.

The second program is recruitment of dental students. Through legislative action, a subsidy program with the New England Board of Higher Education and Tufts University Dental School was established, expecting to result in an increase of 20 Maine residents annually studying dentistry.

A third alternative considered was distribution of fluoride tablets to children from birth through fourteen years to achieve a reduction of dental caries and thus alleviate the demand for dental service. This method is not used as a public health activity. It is, however, used by many practitioners with selected patients.

The third method used in this effort to ease the dental problem is fluoridation of public water supplies. Communal water fluoridation was chosen for its feasibility, cost and overall effectiveness. While the first two methods cited are effective on an individual basis and will result in alleviation of dental needs in certain areas and for a limited population group, their application on a com-

munal basis is unacceptable since these are neither practical on the one hand nor comprehensive on the other. For example, to quickly treat all dental conditions as they presently exist would require additional dentists in this state at a cost of \$1.5 M for training alone, at a time when Maine students face entrance barriers into the so-called "regional" type schools of dentistry as well as financial barriers basic to the state's economic conditions. In addition, recruitment of out-of-state dentists for the rural communities most in need of professional services requires in many instances an arranged guaranteed income, and no such guarantee appears forthcoming.

While dental manpower recruitment is at best idealistic, it is estimated that fluoridation reduces dental decay by 65%, or three cavities on the average youngster through fourteen years of age.<sup>2-3</sup> Fluoridation, then, during the formative years of Maine children would negate the need for 159,665 dental manpower hours.<sup>‡</sup> On this basis, viewing the state as a whole with over 300,000 persons enjoying the benefits of water fluoridation, we can estimate that 245 dentists alone (almost double our present working force) working for a period of one full year would have been needed to treat the 900,000 dental caries already prevented through this public health measure.

The same impracticalities apply with respect to administration of fluoride tablets to children in Maine from birth through fourteen years of age. This program would cost over \$2,550,000 for an estimated 271,000 children in this age bracket for one year alone. These tablets must also be prescribed by a dentist and require constant attention by parents to assure a child's daily usage.

Fluoridation of the public water supplies of the 107 eligible<sup>4</sup> communities in the state, on the other hand, would cost less than \$200,000 initially with yearly additional maintenance costs absorbed in most cases by the water districts in the individual communities.

<sup>‡</sup>Procedures used to determine the preceding and following statistics are as follows:

300,000 persons (3 average cavities) ½ hours per treatment = 450,000 dental hours

52 weeks yearly x 5 days = 30 (personal time) = 230 days

230 days x 8 hours = 245 needed dental manpower

*Continued on Page 50*

\*Director, Division of Dental Health.

# Maine Heart Association Notes

20 Winter Street, Augusta, Maine



## Hemodynamic Effects of Cardiac Arrhythmias

ALAN G. BARTEL, M.D.\* and HENRY D. MCINTOSH, M.D.\*\*

Recent advances in intensive cardiac care and widespread use of continuous electrocardiographic monitoring have emphasized the frequency and nature of cardiac rhythm disturbances. Recognition, however, requires at least a consideration of therapy. Proper therapy is predicated on an understanding of the "natural history" and hemodynamic consequence of a specific arrhythmia.

The net effect of a particular arrhythmia is determined by the circulatory state of the patient as well as the nature of the rhythm disturbance. Usually "benign" rhythm disturbances such as bigeminy, atrial fibrillation, etc., occurring in the patient with a limited cardiac reserve, may rapidly result in severe cardiac decompensation with myocardial ischemia, hypoxia, and hypotension, shock, or death. Furthermore, the arrhythmia may compromise the blood supply to the end organs, and thus produce myocardial infarction, renal failure, cerebrovascular accidents, hepatic necrosis, infarction of the intestinal tract, etc.

Since many arrhythmias are transient, and cause only minor alterations of the circulation, or occur in patients with less severely compromised circulations, the symptoms produced may be vague and nonspecific. Such symptoms include palpitations, episodes of weakness and fatigue; on the other hand, they may cause more serious symptoms and signs such as transient neurological deficits, lapses of memory, presyncope, or syncope, increasing congestive heart failure, increasing angina, intermittent claudication, etc.

It must be remembered that the hemodynamic effects resulting from an arrhythmia are not due solely to the changes of cardiac function. The observed response of the circulation may well be due to peripheral effects. Thus, the status of the peripheral resistance, blood volume, baroreceptor activity, and venous return must be considered in any critical analysis of arrhythmic effects.

Rather than discussing the hemodynamics of particular arrhythmias, it is useful to consider the physiologic alterations that may be produced by any arrhythmia.

### RATE

The rate of contraction of the ventricles will determine the cardiac output if the volume of blood ejected with each stroke remains unchanged. Thus,

rapid or slow rates critically affect hemodynamics. Bradycardia may produce profound effects, especially when the stroke volume cannot increase and peripheral compensatory mechanisms are inadequate. In many patients, however, the heart may compensate physiologically during slow heart rates by increasing stroke volume due to increased ventricular filling and ventricular wall pressure (Starling's Law). The net effect of increased stroke volume may compensate for a decreased heart rate resulting in insignificant changes in cardiac output which can be adequately compensated for by an increase in peripheral resistance.

In addition, bradyarrhythmias may permit the discharge of "irritable" pacemaker foci, thus predisposing to tachyarrhythmias and producing bradycardia-tachycardia syndromes.

If the heart rate increases beyond a critical rate (varying with the basic status of the cardiovascular system) the ventricle fills incompletely during diastole, resulting in a decreased output per beat. A similar, but transient, effect occurs during rapid irregular rhythms or multiple premature contractions (the earlier the contraction, the smaller the subsequent output).

### "ATRIAL KICK"

Although appreciated by Harvey (1628), the importance of coordinated contractions of the atria and ventricles and the contribution of atrial systole to ventricular filling have recently been reemphasized. In normal hearts, atrial contraction may add between 10-20% of ventricular volume, whereas in severe valvular heart disease, such as mitral stenosis, the diastolic ventricular volume may increase over 50% during the period of atrial systole. It has been demonstrated that with an effective well placed atrial contraction a higher ventricular end-diastolic volume may be obtained with a lower mean atrial pressure than occurs when the atria are not functioning properly. Insufficiency of the AV valves may also be produced by the loss of coordinated atrial and ventricular contractions, resulting in detrimental cardiovascular effects.

The hemodynamic effects of a rapid or slow heart beat may be minimal if the "atrial kick" is preserved, but when it is lost, the additional insult may cause decompensation.

Common examples of tachycardia associated with loss of coordinated atrial and ventricular contractions are atrial fibrillation, junctional (nodal) rhythm, and partial (second degree) heart block. The commonly used types of ventricular pacemak-

\*Instructor in Medicine.

\*\*Professor of Medicine and Chief, Cardiovascular Division, Cardiovascular Laboratory, Department of Medicine, Duke University Medical Center, Durham, North Carolina.

Prepared by the Maine Heart Association for this Journal.



ers should also be included, since atrial and ventricular contraction are not synchronized.

#### METHOD OF VENTRICULAR ACTIVATION

Several studies have shown that alteration of the normal sequence of activation of ventricular contraction results in adverse hemodynamic effects. Given two arrhythmias with identical coordination of atrial and ventricular contraction and the same heart rate, one demonstrating an abnormal sequence of ventricular activation (i.e., aberrant conduction) and the other normal sequence of activation, the former will result in greater alteration of hemodynamics. Such alterations, in addition to the absence of an effective atrial kick, explain why ventricular tachycardia or junctional tachycardia with aberrant conduction is less well tolerated than atrial tachycardia. It may also explain why patients with sinus bradycardia may deteriorate rather than improve when the heart rate is increased by fixed rate ventricular pacing (loss of atrial kick and normal ventricular activation).

#### EFFECTS OF PHARMACOLOGIC AGENTS

It should be mentioned that in the conversion of arrhythmias, especially tachycardias, to a normal sinus mechanism with drugs, the frequent myocardial depressant effect of these medications may result in

a significant, although usually transient, fall in cardiac output. Thus, the administration of drugs such as lidocaine, quinidine, Procainamide (Pronestyl®), Diphenylhydantoin sodium (Dilantin®), and propranolol hydrochloride for management of arrhythmias should be performed under careful monitoring; the smallest effective dose should be used with the expectation that the patient may experience a temporary decrease in cardiac output even after normal rhythm has been established.

#### CONCLUSION

The clinical manifestations of cardiac arrhythmias may produce unusual or ill-defined symptom complexes. The occurrence of incipient or increasing congestive heart failure, angina pectoris, intermittent claudication or episodic dizziness, fatigue, transient neurological disturbances or paroxysms of dyspnea should alert the physician to consider the possibility of a cardiac arrhythmia.

It can be concluded that the hemodynamic effects of arrhythmias depend upon the underlying status of the myocardium, blood vessels, and end organs, the heart rate, preservation of the "atrial kick," and normal sequence of activation of the ventricles. The altered hemodynamic effects may be further aggravated by the effects of pharmacologic agents used to correct the arrhythmia.

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#### DEPARTMENT OF HEALTH AND WELFARE — *Continued from Page 48*

Progress toward wider use of communal water fluoridation occurred through extensive promotional activity on the part of the Department of Health and Welfare in 1968. Then, as now, plans included the formation of Committees for Better Health in target locations, pamphlet distribution, open town meetings, and comparable activities with reliance on the ability of the public to respond on a rational basis to this proposed alternative for better dental health.

In that year (1968), water fluoridation was promoted in thirty communities. This effort resulted in an addition of 89,000 people, largely centered in urban communities, consuming fluoridated water.

The spring of 1969 witnessed a continuation of these activities but centered in rural communities with nine towns accepting its installation, bringing the benefits of fluoridation to nearly 5700 more people. These combined figures increased the total number of persons served by thirty-seven percent.

For the sixteen years from 1952 when Norway, Maine, voted to install the state's first fluoride adjuster until 1968, the state averaged an approximate 15,000 fluoridated water users additionally each year. This figure compares significantly with the 89,000 total population added in 1968 with nearly a 600% increase over previous one year tallies. Nineteen-hundred and sixty-eight marked no significant changes in national thrust regarding fluoridation, and no reversal toward support from previously identified organizational opponents. However, for the first time the fluoridation program was brought before the public spectre largely through extensive use of electronic media. Although this program methodology re-

sulted in controversy, it nevertheless proved to be highly successful.

Now, with 69 of Maine's communities having voiced approval of this health measure, our present goal is to raise this number by 21 communities involving 70,000 persons. With substantial success in these towns, we may achieve a level of fluoridated public water users equal to over 60% of the eligible population. We might then have a relative balance between the demands on the dental system and its capacity to deliver services.

Four dental hygienists assigned as field workers are initiating the program in the following twenty communities:

Moscow	Oakland	Winterport	West Paris
Bingham	Fryeburg	Winthrop	Wilton
Eustis	Guilford	Castine	Farmington
Skowhegan	Dexter	Lubec	South Berwick
Madison	Newport	York	Bowdoinham

We believe that our primary objective is preventive health, and in the long run, fluoridation of public water supplies provides for public health monies expended, the most effective method of reducing dental caries in Maine.

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3. National Academy of Sciences - National Research Council, Washington, (1952) (Report of the Ad Hoc Committee on the Fluoridation of Water Supplies), pub. 214:1.
4. With present technical development, fluoridation of public water supplies is limited to communities served by water districts where installation is feasible and where adequate control of the amount is possible.





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## Cerebral Arteriovenous Malformation A Case Report

RICHARD M. SWENGEL, M.D.

### INTRODUCTION

The purpose of this case report is to present the interesting natural history of an arteriovenous malformation in a young man. Fate has allowed this physician an invaluable experience and unexpected follow-up. The author and the patient, initially, became acquainted during the author's residency training program.

### CASE PRESENTATION

The first admission was on December 20, 1966, at Yale-New Haven Hospital. On the day of admission, this 19-year-old previously healthy male noted the sudden onset of weakness in his left lower extremity. The weakness was transient and lasted for only a matter of a few moments. This was abruptly followed by extremely severe frontal headache and complete collapse of the strength in the left lower extremity. The patient, immediately, became obtunded and vomited. At the time of his admission to the hospital, he was somnolent but readily arousable and had a marked left hemiparesis; leg more involved than arm. Sensory examination was intact to all modalities. The patient's past medical history was entirely normal, except for lumbar surgery for a spondylolisthesis at age 13. The patient had no previous history of severe headache, weakness, or seizures. At time of admission, a lumbar puncture demonstrated grossly bloody spinal fluid. Immediately after admission, the patient was taken to the x-ray department, where bilateral carotid angiography was performed. The right carotid angiogram revealed enlargement of the anterior cerebral artery with visualization of an arteriovenous malformation measuring approximately 1 cm. in diameter. The lesion was situated in the anterior parietal region, approximately 1.5 cm. from the midline, and relatively close to the cerebral surface. There was early shunting of opaque material into a superficial vein with rapid filling of the sagittal sinus. The left carotid angiogram showed opacification of the left anterior cerebral artery and, again, filling of the arteriovenous malformation. Branches of the pericallosal and callosal marginal arteries could be traced to the malformation as they passed beneath the falx cerebri to cross the midline. Because of slight displacement of cortical veins and superficial small arteries of the middle cerebral artery distribution, it was felt that there was a small intra-cerebral hematoma about the arteriovenous malformation. Because of the probable intra-cerebral hematoma and dense left hemiparesis involving, prin-



Fig. 1

cipally, the leg, it was elected to take the patient to the operating room. The malformation was well visualized during surgery and attempts were made to clip afferent vessels from the



Fig. 2

callosal marginal and pericallosal arteries. A large, sausage-shaped, short, stubby vein which was felt to be the principal draining vessel was noted tucked into the medial portion of the pre-central lobule and draining directly into the superior sagittal sinus. No attempts were made to remove the draining vein since its anatomic position was directly in the foot-leg area of the motor strip. Following ligation of the pericallosal and callosal marginal afferent vessels, the large draining vein was seen to collapse about 50% of its previous size. Following evacuation of a small intra-cerebral hematoma surrounding the malformation, surgery was terminated. Postoperatively, the patient's course was quite smooth and without complications. However, there seemed to be no difference in the patient's rather dense left hemiparesis. On the patient's 7th postoperative day, he was returned to the x-ray department, where a repeat right carotid angiogram was performed. The unfortunate findings were that, angiographically, the malformation and its afferent and efferent vessels appeared to be totally unchanged. The patient was started on rehabilitation therapy and was, subsequently, transferred to Bethesda Naval Hospital, Washington, D.C., because of his status as a military dependent.

Interim history reveals that, following a 30-day stay at Bethesda Naval Hospital, the patient was discharged but continued on out-patient physical therapy and rehabilitation. Slowly, the hemiparesis cleared with residual foot-drop and peripheral paresis in the left lower extremity. The left arm remained mildly parietic, particularly with fine discriminate movements of the hand and fingers. Late in 1967, the patient began a recurring sequence of major seizure disorder. The seizures would in-



Fig. 3

volve the left upper and lower extremity and produce unconsciousness. Apparently, at no time, did the patient have a generalized tonic clonic seizure. Seizures were moderately well controlled with 400 mg. of Dilantin® and 2 grains of Phenobarbital daily. The patient had married in 1967 and with his wife moved to Maine in the summer of 1968. Because of the recurring seizures, the patient found it extremely difficult to maintain steady employment. This was particularly true beginning in early 1969, when the seizures became more frequent and were usually accompanied by a post-ictal increase of the left hemiparesis of some hours duration.

A second episode of subarachnoid hemorrhage occurred on October 15, 1969, when the patient had the sudden onset of headache followed by paralysis of the left upper extremity and increased weakness in the left lower extremity. The patient laid down and, then, apparently, had a generalized tonic clonic seizure. The patient was brought to the Central Maine General Hospital on October 16, 1969, because of the continued paralysis of the left arm and leg and altered level of consciousness. Examination revealed a somewhat somnolent although readily arousable male patient with a definite plegia in the distal musculature of the left arm and leg and marked paresis of the proximal musculature of these extremities. There was, also, a mild left central facial paresis. Sensory examination revealed a slight hypesthesia to pin and light touch over the entire left side of the body. There was no evidence of astereognosis or alteration in ability to perceive 2-point discrimination. Lumbar puncture revealed grossly bloody spinal fluid under normal pressure. The patient underwent right carotid angiography which demonstrated





Fig. 4



Fig. 5

a large arteriovenous malformation in the pre-central lobule of the right frontal parietal region (Figs. 1 and 2). This malformation was impinging upon and extending into the intra-hemispheric fissure. There appeared to be a rather sizable intra-cerebral hematoma surrounding the malformation. A left carotid angiogram demonstrated the contribution of the left anterior cerebral vessels (Fig. 3). The patient's clinical course was allowed to stabilize; and, because of the persisting marked hemiparesis on the left, with distal plegia of the arm and leg, the patient was taken to the operating room on November 4, 1969, where he underwent right frontal parietal craniotomy with total excision of the arteriovenous malformation, utilizing the adjuncts of the operative microscope, controlled hypotension, and hypothermia. The patient's postoperative course was quite benign and he was semi-ambulatory on the 4th postoperative day, limited only by the distal plegia of the arm and leg on the left. The patient was discharged home on his 11th postoperative day, to continue on out-patient physical therapy.

The patient participated in a concentrated rehabilitation course and, within approximately 6-8 weeks, began to move the fingers of the left hand. The musculature in the proximal left upper extremity regained very nearly normal strength and sensory ataxic movements became markedly decreased. Under the auspices of the Maine State Division of Vocational Rehabilitation, the patient is undergoing job training in the accounting field. At the time of his third admission, the patient felt that he was only moderately physically disabled; and, although he must do most of his typing with the right hand, he is able to, occasionally, manipulate the keys of the typewriter with the left hand. He con-

tinues to wear a short-leg brace on the left lower extremity for persistent foot-drop. The patient was re-admitted to the Central Maine General Hospital on December 12, 1970, at which time he underwent right carotid angiography which demonstrated complete absence of the arteriovenous malformation (Figs. 4 and 5). It is, also, interesting to note the complete absence of the previously present enlarged right peri-callosal artery and diminution in size of the contributions of the middle cerebral artery group (Fig. 4).

#### DISCUSSION

Arteriovenous malformations are congenital lesions arising from a localized mal-development of the primary vascular plexus of the head.<sup>1</sup> Malformations of the anterior half of the circle of Willis' are thought to take place at the 10-20 mm. (1.5 months) embryo size. This corresponds well to the Streeter's Stage III-IV, which is inaugurated by the differentiation in the membranous skull, the dura mater, and the pia-arachnoid membranes.<sup>2</sup> There is gradual separation of the cerebral vessels from the dural vessels and adaptation to the developmental alterations of the cerebrum, itself. Arteriovenous malformations, at time of clinical presentation, are not, in any sense, to be considered new growths but they do, definitely, enlarge with time by expansion of the vessels and dila-



tation of the aneurysmal sacs.<sup>3</sup> Dilatation of arterial trunks gradually extend backwards toward the heart as the circulatory demands are increased. Norlen<sup>4</sup> has proven, quite conclusively, that arterial dilatation is secondary rather than primary because it regresses to normal after removal of the abnormal shunt. It, thus, is apparent that blood normally destined to other areas of the brain passed through the shunt because this is the path of lesser resistance. Adjacent brain and even brain tissue at some distance may be robbed, therefore, of its normal blood supply. The progressive development of an arteriovenous malformation may help to explain why these congenital lesions do not become large enough to produce symptoms until late in childhood or even adulthood. The most common symptoms described are: convulsions, hemorrhage, headaches, progressive neurologic deficit, and mental deterioration. The first symptoms, usually, occur during the second or third decade of life; when hemorrhage occurs, it is more frequently between the ages of 10 and 40.<sup>5</sup>

The treatment of arteriovenous malformations is, at times, quite diverse.<sup>4,6,7,8</sup> It may consist of roentgen therapy, ligation of local arteries feeding the malformation, excision of the malformation, and artificial embolization of the malformation. The Mayo group suggests conservative management as appropriate for 80-85% of patients with arteriovenous malformations.<sup>9</sup> In general, it is sound judgment to avoid surgery for the asymptomatic malformation which may have been discovered during angiography. Also, if a convulsion is the only symptom in a patient with an arteriovenous malformation, and the seizures can be controlled satisfactorily with anti-convulsant drugs, again, surgery can be dispensed with. In general, the criterion for surgical intervention is that of recurrent subarachnoid hemorrhage, intra-cortical or intra-cerebral hemorrhage, uncontrollable seizures, and progressive neurologic or mental deterioration due to the "steal" effect of the malformation. The majority of these lesions should be treated conservatively unless they are in such a location that their excision is carried out with ease and is not likely to leave the patient with disabling neurologic deficits. The best surgical method of treatment appears to be complete surgical excision of the lesion.<sup>10</sup> Excision seems particularly advisable for patients under the age of 30 and, especially, for those small

cortical lesions, even though in the sensory motor cortex or dominant temporal lobe. The presence of an intracerebral hematoma definitely indicates surgical excision.

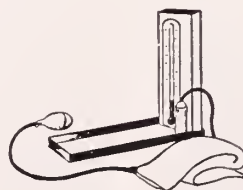
#### SUMMARY

Case presentation of a 19-year-old male who underwent unsuccessful craniotomy for arteriovenous malformation with subsequent repeat subarachnoid hemorrhage and intra-cerebral hematoma some 3 years later. Although partially disabled, the patient is able to maintain gainful employment following excision of his arteriovenous malformation. A short discussion of the embryology, pathophysiology, and criteria for treatment are outlined. It would, thus, seem that, with present day developments in surgical techniques, that excision of arteriovenous malformation is the procedure of choice whenever it can be done with reasonable safety, as indicated by the size of the lesion, its location, and the age and condition of the patient.

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477 Main Street, Lewiston, Maine 04240.



# Neurofibrosarcoma of the Duodenum

WALDO A. CLAPP, M.D.\* and RUDOLPH HAAS, M.D.\*\*

It is commonly assumed that von-Recklinghausen's Disease involves primarily the skin. However, neurofibromata can occur anywhere in the body, along the cranial nerves, in the spinal column as well as in the gastrointestinal tract. In the differential diagnosis of gastrointestinal bleeding or intestinal obstruction in patients with this disease therefore, the presence of neurofibromata in the intestinal tract has to be considered.<sup>1</sup> Sarcomatous degeneration of a neurofibroma may also occur. Stout<sup>2</sup> estimates the incidence of such a development at 5% while Preston<sup>3</sup> and coworkers in a study of 61 patients with neurofibromatosis found 10 cases of concomitant neurofibrosarcoma representing an incidence of 16.5%. Adams and Dodge<sup>4</sup> and Moyer and Rhoades<sup>5</sup> report an incidence of 5-10% and state that any one of these neurofibromata may undergo malignant degeneration. Neurofibrosarcoma of the intestinal tract, however, has been found to be a rare entity and is especially uncommon in the duodenum. Miller and Frank<sup>6</sup> report only three cases of neurofibrosarcoma of the duodenum in the world literature. This case would then, to our knowledge, be the fourth such instance and therefore is considered sufficiently important to be described in detail.

## CASE REPORT

This 60-year-old female with a past history of neurofibromatosis and osteogenesis imperfecta was admitted to the Central Maine General Hospital on 9/22/70, because of recurrent indigestion, nausea, vomiting, diarrhea and abdominal distress of one week's duration.

Past history included a laparotomy for an ovarian cyst in 1940; a hysterectomy for uterine fibroids in 1956 and a cholecystectomy in 1959. She was found to have a secondary anemia in 1950 and since that time has been treated with iron preparations with favorable response. In 1961, there were two episodes of gastrointestinal bleeding without explanation, x-ray examination being negative. In 1967, she was admitted for acute pancreatitis; at that time a hiatus hernia was found. Moderate anemia of the secondary type has persisted since then.

Physical examination on admission revealed a poorly nourished, elderly lady who appeared older than her stated age. Her sclerae were noticeably blue. Diffuse neurofibromatosis of the body was present. Heart and lungs were negative. Abdominal examination revealed a questionable mass in the right upper quadrant but the liver edge could not be palpated because of tenderness in this area. Temperature was 100 degrees. Blood pressure was 120/60. Hemoglobin 13.0 gms.; hematocrit 38.4%; white blood count was 12,200 with a normal differential. Urinalysis was essentially negative. FBS, 113 mg.%; BUN, 12 mg.%; febrile agglutinins were negative. Serum amylase 31 units; alkaline phosphatase 18 and 25.8 Bodansky units on two separate occasions. Electrolytes were within normal limits. SGOT, 109 units. Serum bilirubin 0.8 mg.%; calcium 7.8 mg.%; phosphorus 3.3 mg.%. Barium enema and barium meal

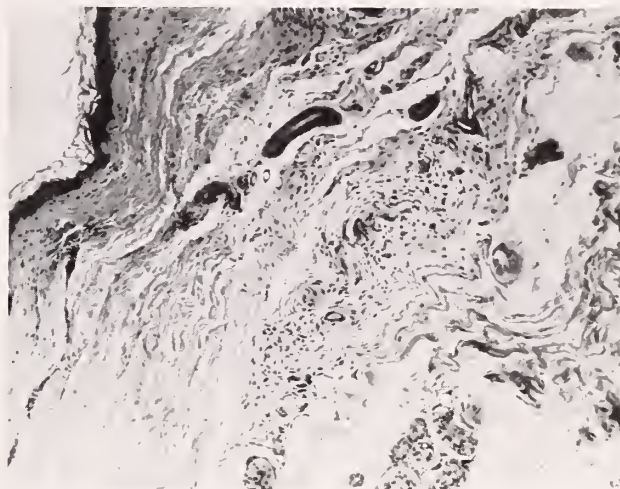


Fig. 1. A representative subcutaneous neurofibroma. X100.

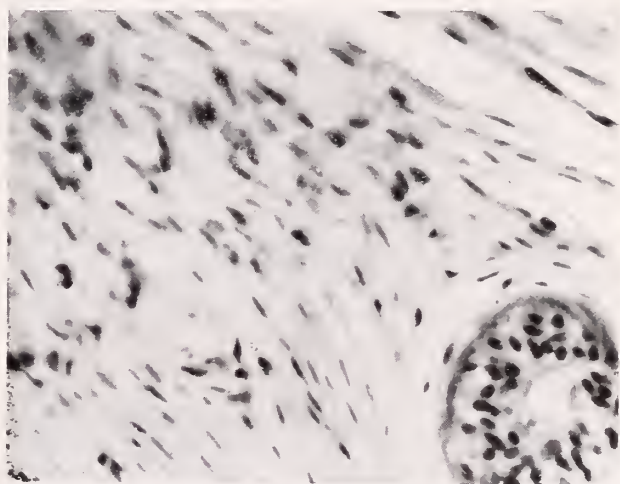


Fig. 2. Detail of one benign neurofibroma. X450.

were negative. Three blood cultures showed no growth after two weeks. X-ray of the chest was reported as being within normal limits. IV cholangiogram revealed poor concentration in the common duct without apparent obstruction.

*Clinical Course:* Patient ran a febrile course and responded well to intravenous Ampicillin®. The temperature returned to normal but recurred after discontinuing the antibiotics at the end of three weeks. A liver scan done at this time was interpreted as showing no uptake in the right lobe. A needle biopsy of the liver revealed changes consistent with large bile duct obstruction of recent origin. Six weeks after admission an abdominal exploration was done. On entering the peritoneal cavity, a great deal of induration in the right upper quadrant was encountered. The omentum was found to be adherent to the liver at the site of the previous cholecystectomy. On palpation, the liver revealed many soft areas on its surface. These ruptured when a biopsy was attempted. Frank, purulent material exuded from three discrete areas in the right lobe of the liver. Palpation beneath the liver disclosed purulent exudate as

\*From the Surgical Service, Central Maine General Hospital, Lewiston, Maine 04240.

\*\*From the Medical Service, Central Maine General Hospital, Lewiston, Maine 04240.





Fig. 3. The duodenal mass. Ulcerated mucosa is at upper left; muscularis is at lower left. The rest of the wall is replaced by an invasive cellular neoplasm. X40.

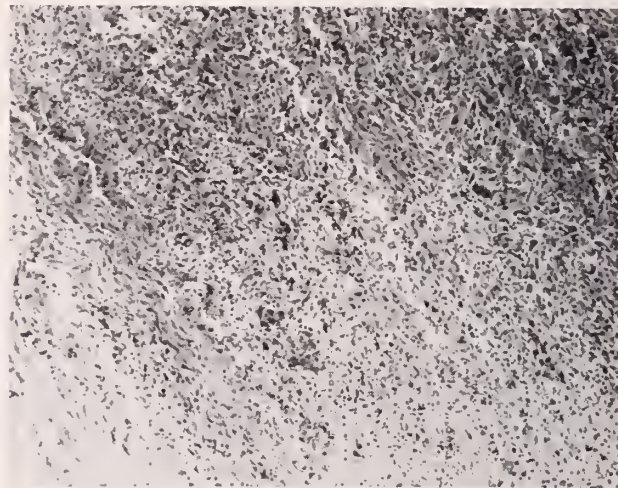


Fig. 4. Detail of the duodenal mass showing pleomorphic nonepithelial spindle cells revealing no myofibrils by PTAH stain. X100.

well as a third mass beneath the transverse colon in the vicinity of the third portion of the duodenum. Drains were placed in the three abscesses in the liver and a separate drain was placed in the vicinity of the third portion of the duodenum. Culture of the liver abscesses disclosed alpha hemolytic streptococci. Histological diagnosis of the material removed from the vicinity of the third portion of the duodenum was interpreted as representing leiomyosarcoma. The patient's immediate postoperative course was relatively benign. However, one week postoperatively her condition suddenly deteriorated with marked mental confusion, drop in blood pressure and restlessness. The patient expired on the ninth postoperative day. The postmortem findings were as follows:

- Duodenal neurofibrosarcoma with mucosal ulceration and massive gastrointestinal hemorrhage therefrom.
- Right retroperitoneal neurofibrosarcoma.
- Acute and chronic cholangiolitis with choledocholithiasis.
- Multiple hepatic abscesses.
- Acute interstitial pancreatitis.
- Early acute bronchopneumonia.
- Right fibrinous pleuritis with atelectasis of the right lower lobe.
- Hiatus hernia.
- Ulcerative esophagitis.
- Subcutaneous neurofibromatosis.
- Osteogenesis imperfecta.

#### CONCLUSION

This 60-year-old female with neurofibromatosis and osteogenesis imperfecta developed a sarcomatous degeneration of a neurofibroma of the duodenum which eroded the mucosa of the third portion of the duodenum causing a massive intestinal hemorrhage which resulted in the terminal event.

It was felt that this rather unusual complication of a supposedly benign disease deserved presentation in this journal.

#### ACKNOWLEDGEMENTS

We wish to thank Dr. Ronald Potts and Dr. John Carrier for their contribution of pictures used in this article.



Fig. 5. Anterior liver scan showing extremely poor visualization of most of the right lobe of the liver. The spleen shows excellent uptake of the isotope. 2 mCi 99 mTc Sulphur Colloid administered about 1/2 hours prior to scan.

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# Intraluminal Duodenal Diverticulum

JOHN W. CARRIER, M.D. and CLARK F. MILLER, M.D.\*

## INTRODUCTION

The first recorded case of intraluminal duodenal diverticulum was reported by Richard E. Kinzer in 1949 in a twenty-two-year-old white male with intermittent episodes of upper intestinal obstruction. Since that time a total of only thirty-five cases have been reported. Though this condition may produce acute symptoms, it is usually accompanied by vague intermittent symptoms which may mimic other forms of disease, particularly biliary tract pathology. Since the condition can be demonstrated preoperatively and corrected surgically, it is felt that presentation of an additional case with a variation in the reported findings is worthwhile.

## EMBRYOLOGY

Three phases are noted during fetal development of the duodenum. The rotation phase occurs during the eighth through tenth weeks when the duodenum assumes its final position in the abdomen. At this time, the dorsal mesentery fixes the duodenum and the ventral mesentery becomes obliterated. Prior to this, at six weeks, the duodenal epithelium begins to proliferate and occludes the lumen. Shortly after this, vacuoles appear and as they coalesce the lumen of the duodenum is restored by the tenth fetal week. Failure of complete re-canalization may result in duplications or in septa or stenoses. Persistence of a remnant of a duodenal diaphragm is probably the etiology of the intraluminal duodenal diverticulum.

## REPORT OF CASE

A fifty-eight-year old white female was admitted to the hospital because of a two-week history of nausea, vomiting and occasional diarrhea. For six months prior to this, she had had vague general malaise and epigastric distress with fifteen pounds weight loss. She also noted some intermittent epigastric distress ever since a fall at age six. She had had an appendectomy at seventeen years of age and a hysterectomy at twenty-three.

Physical exam revealed a moderately obese female in no acute distress. Some epigastric tenderness was noted without spasm and no other abnormal findings were noted except for the operative scars.

Laboratory studies were within normal limits.

## RADIOLOGIC FINDINGS

A cholecystogram was performed and stones were demonstrated in a gallbladder showing good function. A barium enema was normal.

An upper gastrointestinal study revealed the stomach and duodenal cap to be normal. A large radiolucent filling defect measuring 5 x 8 cm. in size was seen in the distal second and proximal third portions of the duodenum (Figs. 1 and 2). The mass was seen to lie entirely within the lumen of the duodenum. Barium passed around this mass but not into it. The duodenal



Fig. 1



Fig. 2

\*Department of Radiology, Central Maine General Hospital, Lewiston, Maine 04240.



Fig. 3

mucosa was stretched around the mass but was otherwise normal. No obstruction was present and the remainder of the third portion of the duodenum and the upper small bowel were normal.

#### SURGICAL AND PATHOLOGIC FINDINGS

A cholecystectomy and duodenotomy were performed and on opening the duodenum a large cyst-like mass was seen which was removed intact, being fixed by a small pedicle to the duodenum just distal to Ampulla of Vater. After removal, the cyst was opened and found to contain duodenal contents. Pathological examination revealed two layers of duodenal mucosa with some irregularly hypertrophied muscularis mucosae and some loose vascular fibrofatty tissue between. Moderate edema and acute and chronic nonspecific inflammation were noted.

The postoperative course was relatively uneventful and the patient was discharged and returned about six weeks post-

operatively for a repeat barium meal which showed the duodenum to be normal (Fig. 3).

#### DISCUSSION

This case is of interest primarily because of its rarity but also because it demonstrates a surgically correctable lesion which causes vague intermittent symptoms over a long period of time. Previously reported cases have shown at least partial filling of the diverticulum with barium, whereas, in this case, no barium passed into the diverticulum. It must be assumed that edema of the stoma was the cause of the non-filling. As noted above, persistence of an incomplete duodenal diaphragm remnant probably is the original etiologic factor in this condition with pressure on the diaphragm from normal food propulsion probably causing invagination and diverticulum formation.

Coors and Mitchum suggest that this might be caused by growth of the duodenum after fixation at the ampulla with resulting gathering of mucosal folds transversely at this level causing small sac-like structures which then are enlarged by the propulsive effects of peristalsis. Regardless of the etiology of the original mucosal band, it seems that considerable time is required for development of the diverticulum which explains why all thirty-five of the reported cases have been in adults.

#### SUMMARY

A case of intraluminal duodenal diverticulum is presented with comments on symptomatology, diagnostic findings, pathology and probable etiology.

#### ACKNOWLEDGMENT

Appreciation is expressed to Dr. Wedgwood P. Webber, Surgeon and Drs. Ronald S. Potts and Joseph P. Fanning, Pathologists for their contribution to this report.

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DEAN H. FISHER, M.D.  
COMMISSIONER

## State Of Maine

# Department of Health and Welfare

## Interview With Mark Knowles, Director of the State Comprehensive Health Planning Agency: New Directions for 1971 and Beyond.

MICHAEL J. MERRILL\*

An old, mill worker from the Dexter area – we'll call him Ralph – propped his wet, black boots up on a cardboard shipping box in a small country store, spat out a chunk of well-chewed Redman tobacco, cleared his throat, and began to tell the grocer, a long-time friend and crony, about his trip to Bangor for a physical check-up.

"Things sure have changed, ain't they, Charlie, what with all them testing machines, big bills and all? It just ain't the same anymore."

"Yup," Charlie replied, "it just ain't the same anymore. Don't 'spect it ever will be, Ralph."

Most people would agree with Ralph and Charlie. Things have changed, and it appears change in the health care delivery system in Maine and the country will be the theme of the 1970s.

The Norman Rockwell image of the American family doctor is gone from the pages of the old *Saturday Evening Post* as well as the lives of Ralph and Charlie. A new image and a new system, much more skilled and by far more complicated, has emerged to provide health care to 200 million Americans at a total cost which will reach the \$80 billion mark before the end of the decade.

Congress foresaw the accelerated change the 1970s would bring and politicians began pushing health legislation through committees to the floors of Congress and finally to the people who put them there in the first place – the American voter, the citizen who has come to expect health care as an inherent right. The increasing demand for health services is severely testing the manpower and resources of the existing system, and forcing legislators and health planners to come to grips with the new demand and develop new organizational and financial mechanisms for the delivery of health care.

The need for rational, coordinated, comprehensive health planning was more pressing than ever in 1966



MR. KNOWLES

when Congress passed Public Law 89-749, better known as the "Partnership for Health Act." Maine obeyed the mandate from the floors of Congress to establish comprehensive health planning agencies in all 50 states by authorizing the Department of Health and Welfare to act as the state agency.

The man who directs Maine's health planning effort is Mark Knowles, a Downeaster recently returned to the state and the challenges his new position poses. He talked for an hour or so about what CHP could do for people like Ralph and Charlie and the people who look after their health. The room was cluttered with file cabinets, dated calendars, and reams of paper, all waiting for movers to take it to the new offices across the street from the old. But Ralph and Charlie weren't forgotten that day amidst all the confusion and aren't likely to be if things go the way Mark Knowles hopes they will. The challenge is obvious.

### *Why does comprehensive health planning exist?*

"Health is a 63 billion dollar a year industry, an industry which accounts for approximately seven percent of our gross national product. Unfortunately, the industry is ailing. Pollutants foul our air, water, and land. Noise levels increase yearly. Medical manpower and facilities are so maldistributed that large segments of the popula-

\*Special assignment writer, Office of Information and Education.



tion, especially the urban poor and those in rural areas, get virtually no care at all. The demand for medical services has been racing ahead at ever increasing velocity and the cost of health care is continually rising. Despite our huge expenditure of funds, we are in the midst of a national health crisis."

*The legislation which created CHP called for the development of a state comprehensive health plan. Now that the organizational and administrative phases have ended, you'll be able to devote time to developing that plan. Where do things stand now?*

"As you know, the major goal of the state agency is the development of a state comprehensive health plan. It will address itself not only to the health problems facing Maine's citizens, but also the organization, financing, and delivery of health care services. The plan is not intended to be a sterile document relegated to a dusty shelf, but rather a dynamic plan which will truly reflect Maine's health needs and resources. Now we're in the process of educating ourselves about the situation in Maine and the needs of the providers and consumers of health care. The next steps will involve the collection of data, the drawing of conclusions, and the formulation of preliminary recommendations. We'll work with the "B" agencies – the areawide regional health planning agencies – in developing their own regional programs, and coordinating those plans with our overall state plan. Finally, we'll share our recommendations with the appropriate agencies to examine the plan and to modify their programs to meet the recommendations. At the end of 1971, we should have a tentative plan on paper. If it's approved by Dr. Fisher, Commissioner of the Department of Health and Welfare, the final plan should be completed in early 1972. However, CHP will make every effort to ensure that the planning process is relevant and its goals feasible. As needs and conditions change, as new discoveries are made, we'll revise the plan."

*What is CHP's ultimate goal?*

"The recognition of the State Health Planning Council, made up of approximately 50 representative providers and consumers of health care, as the key body in health planning in Maine, as well as the attainment of the highest possible level of health for all of Maine's citizens."

*One striking feature of the "Partnership for Health Act" was that the consumer should comprise at least 51% of the membership of the State Health Planning Council. Traditionally, the providers of health care have done most of the planning. Why the change?*

"It's a new ball game. The consumer is the *sine qua non* of the health planning process. In the past, health planning has been done by providers, who, by their own admission, haven't always done a good job of it. At present, about 70% of the council members are consumers. One of the major thrusts of P.L. 89-749 was that the voice of the consumer must be heard – loud and clear."

*What are your plans for 1971?*

"The major thrust will be in the areas of health services, manpower, and facilities, and the creation of greater involvement of SCHP Council members in the planning process. We will involve them through task forces organized around specific problems, including accidents, lung cancer and emphysema, high mortality and morbidity rates, and birth injuries. In the area of health manpower, CHP is monitoring three major activities: the University of Maine's efforts in developing a health sciences program (CHP provided the University with a \$50,000 grant to develop such a program), the Regional Medical Program's proposal for a medical school, and the use of paramedical personnel in OEO projects in Rockland-Camden and Farmington. Health facilities planning is our third area of concern. In the past, hospitals have planned in isolation, often to the exclusion of other neighboring hospitals. In some cases, hospitals have been guilty of not using dollars and manpower efficiently, and they have not always planned on a regional basis in response to regional needs. For example, CHP has taken the leadership, in conjunction with the Kennebec Valley Regional Health Agency, the Gardiner and Augusta hospitals, and RMP, to do a health evaluation of the Augusta-Gardiner area and to come up with a proposal as to how Gardiner General Hospital can move into the area of health services delivery more consistent with regional needs.

"CHP is also involved in other projects such as the newly-formed Maine Health Data Service Center, drug abuse activities, and family planning. In the near future, we hope to evaluate the proliferation of cardiac surgery units, gamma cameras, and radiation therapy services throughout the state. We also hope to hold seminars on group medical practice, conduct workshops on health facilities planning and the Hill-Burton program to educate staff members of all health planning agencies, and develop seminars on genetic counseling."

*How closely do you intend to work with the medical profession in your planning efforts?*

"We need the involvement of the physician in planning. We couldn't do the job without him and CHP hopes to share in decision-making with Maine's physicians. In 1969, the Maine Medical Association formed a subcommittee to evaluate CHP and its role in working with the medical society. I view this as a positive step.

"The role of the physician in planning, as I see it, is to provide his unique viewpoint and insight regarding the health care system. The results of such input should be reflective of the best thinking of the medical community. Physicians should be, and I hope will be, increasingly involved in the comprehensive health planning process."

*The 1970s will no doubt bring a significant reorganization and refinancing of the health care system. Various proposals for national health insurance, the American Hospital Association's AMERIPLAN, the American Medical Association's MEDICREDIT proposal, and oth-*

*er proposals are already before the public. There is little doubt in anyone's mind that changes will take place. What role will CHP play in the development of new arrangements for the delivery of health care in Maine?*

"It is doubtful if the health care delivery system of the future will be as it is today. It is to be hoped that we will see some fundamental changes. The productivity of the system, the availability and accessibility of its services, and their acceptability to the community are key areas in which changes must be made.

"We'll be involved in what might be called community health care centers with an emphasis on preventive care. We'll work with hospitals on programs reflecting regional needs. We'd like to have a role in educating appropriate groups regarding national health insurance programs and other plans under consideration so both consumers and providers will be more able to make rational decisions as to the relative merits of each. I can see us engendering creative approaches to Maine's health manpower system. We would also encourage various forms of group medical practice in areas where it makes sense."

*A fundamental prerequisite for any planning process is an adequate data base from which to work. Is this available to you at this time?*

"We cannot do rational planning without a statewide data retrieval system. In the past, we've used the old English system of muddling through which is sometimes successful, sometimes disastrous. We can't afford that approach in Maine because we haven't got the money, the time, or the manpower. We've cooperated with a number of other agencies in creating the Maine Health Data Service Center, independent of state offices and under the directorship of Dave Soule, to provide the data base we need. Whether this data system provides substantial input in one year or five, we must have it and it will come. Our current situation dictates it."

*One problem of the existing system is the shortage of health manpower, especially physicians. Do you think proposals for a Maine medical school might be a solution to that problem?*

"The idea of a Maine medical school without walls has merit, and, if the idea is feasible, CHP will certainly help in an appropriate manner. With the increasing disenchantment of health professionals regarding a decrease in the quality of life in urban areas, we'll see an exodus from these areas toward relatively rural settings. I feel we'll see more physicians, more dentists, and more health professionals coming to Maine. This influx won't necessarily offset the need for physicians, therefore alternative means such as a medical school, might be needed.

Perhaps a school for physician's assistants is warranted and might be worthy of further examination. We must develop paramedical personnel to assume less professional tasks of physicians to free them so they can become involved in what they were trained to do."

*Earlier, you mentioned that CHP would develop seminars on group medical practice. Various forms of group practice, based on prepayment schemes and alternative forms of physician reimbursement, are rapidly developing in other parts of the country, especially California. Some physicians in Maine are discussing the development of medical foundations or similar arrangements. Do you think such arrangements are a realistic solution to some of the problems of health care delivery?*

"As I said earlier, we would encourage various forms of group practice in areas where it makes sense. The hour has arrived for radical change. Our hope for the future is to get more value from each dollar spent on medical care. Just to pump more money into the system will solve little or nothing. Group medical practice might be one way of getting more value and better care for the dollar. No one is suggesting that outside influences force their opinions upon physicians when it comes to the practice of medicine. But I think it is fair to suggest that the management of medical care has become far too important to leave to doctors, who are, after all, not managers or businessmen to begin with.

"Peer review is, of course, an important factor in the development of group practice. Its function should be to review utilization, costs, and quality of care. The Bennett amendment, which I understand has passed the Senate, is an example. I feel that the solo practice, fee-for-service physician will begin to move toward the group practice concept. The emphasis must no longer be on crisis intervention where the costs for care are high and the rates of success relatively low, but on preventive health care where the patient is viewed as a member of a family unit and not as an isolated entity.

"But there exists no single panacea to fill the gaps and upgrade the system. Eventually, we must spend more on health care, perhaps substantially more, but with more money must come new ways of getting more and better care for the dollars we all spend."

*How do you intend to evaluate the progress of CHP five or ten years from today?*

"I feel management by objective is the key here. We must develop programs that are measurable. Each aspect of the total program will have an evaluative component put in so we can judge its relative success or failure on objective criteria.

"But, in the final analysis, the health status of Maine's citizens will be the real criteria of our success."

And, in the final analysis, so will the health status of Ralph and Charlie. Next year and in the years following Ralph is likely to put his foot up on that same box in that same grocery store and tell Charlie about his trip to Bangor. Whether he'll be able to tell Charlie things are getting better and he's getting the kind of care he needs depends upon those responsible for planning. That is the challenge CHP faces, and one million people will evaluate its progress the same way Ralph and Charlie do.



# From the Secretary's Notebook

## Revision of M.M.A. Constitution and Bylaws

The Maine Medical Association is now in the process of revising its Constitution and Bylaws. The proposed changes will be presented to the House of Delegates at its Interim Meeting on April 4, and then at its Annual Meeting, June 13, for final approval.

In accordance with Article XII, Amendments, of the *current Constitution*:

"The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates at any duly called meeting of said House of Delegates, provided that such amendment shall have been presented in open meeting at any previous meeting of the House of Delegates and that said amendment shall have been published in the Journal of this Association, or a copy thereof sent to each member of this Association at least two months before the meeting at which final action is to be taken."

Listed below are the proposed changes for the Constitution.

### M.M.A. CONSTITUTION

#### PRESENT

#### ART. I, NAME OF THE ASSOCIATION

The name and title of this organization shall be the Maine Medical Association.

#### ART. II, PURPOSES

The purposes of this Association are to promote the science and art of medicine, the protection of public health, and the betterment of the medical profession; and to unite with similar organizations in other states and territories of the United States to form the American Medical Association.

#### ART. III, COMPONENT SOCIETIES

Component societies shall be those county medical societies whose several constitutions and bylaws have been approved by this Association and such approval shall continue unless further amendments to the several constitutions and bylaws shall be in conflict with the provisions of the constitution and bylaws of this Association.

#### ART. IV, COMPOSITION OF THE ASSOCIATION

This Association shall consist of members who shall be the members of the component county medical societies who have been certified to the headquarters of this Association, and whose dues and assessments for the current year have been received by the Secretary.

#### ART. V, HOUSE OF DELEGATES

The House of Delegates shall be the legislative and policy-making body of this Association, and shall consist of (1) delegates elected by the component county societies, (2) the Secretary of each county society, and (3) the members of the Council.

#### PROPOSED CHANGE

Art. I – None

Art. II – None

Art. III – None

Art. IV – None

#### ART. V, HOUSE OF DELEGATES

The House of Delegates shall be the legislative and policy-making body of this Association, and shall consist of (1) delegates elected by the component county societies, (2) the Secretary of each county society (*if a member of the Society*), (3) the members of the Council, and (4) *past presidents of the Association*.



## ART. VI, COUNCIL

The Council shall consist of the President, President-Elect of the Association, Executive Director (if a member of the Association), Secretary-Treasurer (if a member of the Association), the immediate Past President, the delegate and alternate delegate to the American Medical Association, and one Councilor from each Councilor District. Seven members shall constitute a quorum.

## ART. VII, SESSIONS AND MEETINGS

Section 1. The Association shall hold an Annual Session, during which there shall be held scientific sessions, which shall be open to all registered members and guests. The time and place for holding such Annual Session shall be fixed by the Council.

Section 2. Meetings of the Association may be called by the President, or by the Council, and shall be called by the President on petition of ten (10) members of the House of Delegates or fifty (50) members of the Association. There shall be one (1) scientific meeting sponsored by the Association each year.

## ART. VIII, OFFICERS

The officers of this Association shall be a President, a President-Elect, a Secretary-Treasurer (if a member of the Association), Speaker (of the House), and a Councilor from each Councilor District.

## ART. IX, FUNDS AND EXPENSES

Funds shall be raised by an equal per capita assessment on each member of each component society.

## ART. X, REFERENDUM

At meetings of the General Assembly, the Association may, by a two-thirds vote, order a general referendum upon any question pending before the House of Delegates. The House of Delegates may, by a vote of its members, submit any question to the membership of the Association for its vote. A majority of all the members of the Association voting shall determine the course of action.

## ART. XI, SEAL

The Association shall have a common seal. The power to change or renew the seal shall rest with the House of Delegates.

## ART. XII, AMENDMENTS

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates at any duly called meeting of said House of Delegates, provided that such amendment shall have been presented in open meeting at any previous meeting of the House of Delegates and that said amendment shall have been published in the Journal of this Association, or a copy thereof sent to each member of this Association at least two months before the meeting at which final action is to be taken.

## ART. VI, Executive Committee

The Council shall consist of the President, President-Elect of the Association, Executive Director (if a member of the Association), Secretary-Treasurer (if a member of the Association), the immediate Past President, the delegate and alternate delegate to the American Medical Association, *the Speaker of the House*, and one Councilor from each Councilor District. Seven members shall constitute a quorum.

## Art. VII – None

## Art. VIII – None

## Art. IX – None

## Art. X – None

## Art. XI – None

## Art. XII – None

Proposed changes in the current *Bylaws*, in accordance with Chapter XIII on Amendments, will be sent to "the Secretary of each county society and each Delegate and Alternate Delegate thirty (30) days preceding the Annual Meeting."

# Important Days . . .

. . . to mark on your calendar

<i>June 1971</i>						
<i>Sun</i>	<i>Mon</i>	<i>Tues</i>	<i>Wed</i>	<i>Thur</i>	<i>Fri</i>	<i>Sat</i>
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

The 118th Annual Session

Maine Medical Association

The Colony, Kennebunkport, Maine

## Necrology

FRANK S. BROGGI, M.D.

1908-1971

Dr. Frank Scannell Broggi died unexpectedly on January 7, 1971. He was 62 years old.

During his high school years, he developed nephritis and because of his illness he was discouraged by his family from seeking a medical education. However, following graduation with honors from Sanford High School, he spent two years in the premedical course at Tufts and graduated from Tufts Medical School in 1932, where he was elected to the William Osler Honorary Society. His internships included Maine General Hospital; Neurology and Neurosurgery at the Boston City Hospital; Medfield State Hospital where he trained for a three-year period until 1937, as resident and assistant psychiatrist. He entered general practice in Framingham for several years and later limited his practice to his specialty. He served as Neuro-Psychiatrist at the Framingham Union Hospital at that time.

He volunteered for the Navy in 1942 and served in the Pacific Theatre as Lt. Commander from 1942 until September 1946, receiving two medals in the Asiatic-Pacific Campaign. Following the war, he started in the private practice of psychiatry and he became Chief of Psychiatry at the Mercy Hospital. He was a member of the staff at the Maine Medical Center, consultant at Portland City Hospital and the V.A. Hospital at Togus. He was also consultant, Portland District Court, Cumberland County Superior Court, as a State appointee.

He was a member of the Portland Medical Club, Cumberland County Medical Society, Maine Medical Association, American Medical Association, Maine Psychiatric Association, Massa-

chusetts Medical Society and American Psychiatric Association.

He was a diplomate of the American Board of Neurology and Psychiatry. He was one of the few physicians in Maine who was a diplomate of both boards. He became a member of the Alpha Omega Alpha Honorary Medical Society at Tufts in 1940.

He was interested in the somatic aspect of psychiatry. Electroshock therapy was his chief interest to which he contributed by being one of the first physicians to modify the shock treatments and bring it to its final form as it is practiced today and known as Electro-therapy. He contributed several articles to The Journal of the Maine Medical Association and the New England Journal of Medicine. During his practice, he had given over 16,000 treatments by this method.

He was a communicant of the Church of St. Louis. He was a member of the Portland Elks Club. His hobbies included reading and he was a devoted family man. He is survived by his lovely wife, the former Rona Gatward; two sons, Charles R. Broggi, II and Frank Broggi, Jr.; a brother, Doctor Richard Broggi of Worcester, Mass.; two sisters, Mrs. Eleanor Foley, R.N. and Mrs. Joyce Kelly of Augusta.

Be it hereby resolved that this be spread on the records of the Cumberland County Medical Society and a copy sent to his family.

Respectfully submitted,  
Co-chairmen,  
Benjamin Zolov, M.D.  
Alphonse Telfeian, M.D.

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## County Society Notes

### PENOBSCOT

A regular meeting of the Penobscot County Medical Society was held on October 20, 1970 at the Red Lion in Bangor, Maine with the President, Dr. Edward L. Curran, presiding. Approximately forty-seven members and guests, including counselor Dr. John B. Madigan, were present.

The minutes of the previous meeting were approved as read. The minutes of the Executive Council Meeting of this date were read.

#### *Announcements:*

1. The Penobscot County recipients of the Maine Medical Education Foundation awards were noted.

2. A letter dated October 1, 1970 from the American Medical Association relates a new bimonthly publication of mental and public health news and is being published by the Department of Environmental Health to carry out a recommendation from the AMA Council on Environmental and Public Health. This is to be of limited distribution, with copies available at the County Society.

3. Planning for the development of a neighborhood health center for Bangor being coordinated by the Penobscot Valley Regional Health Agency was brought to the attention of the Society.

4. Dr. Lewis E. Phillips, Chairman for the Diabetes Committee, announced that the annual detection drive would be November 15th to the 21st. Available to the public, besides free

testing of urine, will be blood sugars at a charge of 25c. These will be done at Eastern Maine Medical Center as graciously arranged by the pathologist, hospital and technicians. Also, diabetes teaching classes will be held at 2:00 and 7:00 p.m. daily at Eastern Maine Medical Center that week.

5. A resolution for Dr. John E. Whitworth was requested from Drs. Carl E. Blaisdell, Allison K. Hill and Robert M. McQuoid.

#### *New Business:*

1. The Society admitted Drs. Alan W. Boone, Robert H. Brown, Robert L. Burdick, George E. Files and Joe R. Wise, Jr. to active membership.

2. A motion was passed that a committee be appointed to review the bylaws and constitution. It was also felt that the term of office should be changed to start possibly with the May meeting, and that the necessary changes be prepared for the admission of qualified doctors of osteopathy.

3. Dr. William M. Shubert motioned that the Society agree to the expense associated with reviewing pending federal legislation and the consideration of forming a nonprofit organization, a foundation for medical care, by the Society. This was passed.

4. A motion by Dr. Thornton W. Merriam, Jr. was passed that a chairman of the delegation be appointed yearly.

A regular meeting of the Penobscot County Medical Society was held on November 17, 1970 at the Pilot's Grill in Bangor,



Maine with the President, Dr. Edward L. Curran, presiding. Approximately forty-five members were present.

The minutes of the previous meeting were approved as read.  
*Announcements:*

1. Dr. Thornton W. Merriam, Jr. was appointed Chairman of the Delegates for the ensuing year.

2. A nominating committee was appointed by Dr. Curran — Drs. Lloyd Brown, Leonard G. Miragliuolo and Jay K. Osler.

3. It was announced that a special meeting of the House of Delegates is to be held on December 13 at Thayer Hospital in Waterville. Topics for discussion are to be Peer Review, Medical Foundations, Reports of the Legislative Committee, and Administrative Proposals.

4. Dr. Hans A. Holzwarth was appointed to represent the county to assist with the "young lawyers section drug abuse program of the American Bar Association." This was initiated through the State Chairman, Mr. Howard H. Dana, Jr.

5. Dr. Merriam was requested to represent the County Society and its association with the State Insurance Commission.

*Old Business:*

Brief initial reports regarding the utilization committees for the Orono Nursing Home Inc. and Paulsen House Inc. were noted. Further reports are to be received.

*New Business:*

None.

The annual meeting of the Penobscot County Medical Society was held on December 15, 1970 at the 95er in Bangor, Maine, with the President, Dr. Edward L. Curran, presiding. The meeting commenced at 8:00 p.m. with thirty-five members present. The meeting was reconvened at 8:40 p.m. at the Eastern Maine Medical Center Conference Room for further private discussion with twenty-six members present. Dr. Hadley Parrot motioned the reconvening of the meeting, which was concurred by the Society. Dr. Herbert C. Gilman recommended that hereafter the meetings be held at locations where one may have private discussions.

*Reports:*

A. House of Delegates meeting, December 13.

Dr. Thornton W. Merriam, Jr. and Dr. George W. Wood, III presented and discussed with the Society the following topics:

1. Medical Foundations — The House of Delegates has favored the concept of a Medical Foundation.

2. Legislative Committee Report

a. The House of Delegates encouraged the formation of a common M.D. and D.O. registration board.

b. Hancock County inquired regarding statutes for legalizing sterilization, in that there are no specific laws in this regard at this time. The recommendation to the Society has been that no recommendations for change of the law be presented.

c. It was recommended that legislature be recommended for the removal as a criminal act, abortion, when it is done in cases of incest, rape, anticipated malformed fetus and/or situations that may adversely affect the health of the mother.

d. The House of Delegates supported the idea of recommending safety glass to be installed in many areas which may cause personal injury.

B. Further discussion of committee reports on the Orono Nursing Home Inc. and Paulsen House Inc. were deferred to the next meeting.

C. A report by Dr. Merriam regarding the State Insurance Commission was referred to next meeting.

*New Business:* Dr. Peter A. Emmett was admitted to active membership in the Society being proposed by Drs. Hadley Parrot and Robert O. Kellogg.

The Nominating Committee proposed the following officers:

President, Charles D. McEvoy, Jr., M.D., Bangor

President-Elect, John S. Houlihan, M.D., Bangor

Secretary, Lewis E. Phillips, M.D., Bangor

Treasurer, Philip R. Kimball, M.D., Bangor

Counselors, Drs. Benjamin L. Shapero, Bangor (1 yr.),

Irvin E. Hamlin, Millinocket (2 yrs.) and Thornton W.

Merriam, Jr., Bangor (3 yrs.)

There were no further nominations, and the above were voted into office by the membership.

The new President, Dr. McEvoy, inquired regarding the Society's wishes in that there was a tabled motion regarding revision of the bylaws. Previously, this had been tabled by the chair, pending revision of the State bylaws. In October 1970, it has been discussed that the term of office should be changed to start possibly with the May meeting and that necessary changes should be prepared for the admission of qualified doctors of osteopathy, as well as having a general revision of the bylaws. At that time, it had been suggested that the officers entering as of this date should therefore continue their term for approximately one and one-half years.

Dr. Wood motioned that the tabled motion regarding revision of bylaws be brought before the Society. This was passed. Drs. Wood, Leonard G. Miragliuolo and Elmer M. Sewall were asked to present a revision of the bylaws to the Society with Dr. Wood acting as chairman.

The meeting was adjourned at 9:55 p.m.

LEWIS E. PHILLIPS, M.D., *Secretary*

#### LINCOLN-SAGADAHOC

The regular meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on November 17, 1970.

The meeting was called to order by the President, Dr. Arkadij Oceretko at 8:45 p.m. Dr. George W. Bostwick read the minutes of the October meeting and they were accepted as read.

Old business — none.

New business — The special session of the M.M.A. House of Delegates will be held Sunday, December 13, 1970.

A request from the Chairman of the Young Lawyers Section Drug Abuse Program of the American Bar Association was read asking for an official liaison representative from the Lincoln-Sagadahoc County Medical Society. Dr. Charles E. Burden was unanimously nominated, seconded, and appointed by acclamation.

Special memberships were received, and the secretary was instructed to make contact with all Junior members to review their current status and various desires regarding such membership.

Dr. Nelson P. Blackburn then introduced the speaker, Dr. Donald F. Marshall of Portland, who made a lucid and interesting discussion of the Renal Dialysis Program in Portland.

A regular meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on December 15, 1970. The meeting was called to order by the President, Dr. Arkadij Oceretko.

The minutes of the previous meeting were read and accepted — without one murmur.

There was no old business.

Drs. Paul A. Fichtner and George W. Bostwick reported the actions of the House of Delegates in special session two days previously. Dr. Fichtner described the concept of Foundation Plans for comprehensive health care. Plans for reorganization of the administrative and executive structure of the M.M.A. were discussed, as well as the reports of the Legislative Committee and the Committee on Peer Review. Dr. Fichtner then outlined Council discussions of future medical education in this State, and the MEDEX program.

Dr. Oceretko appointed Drs. Edward L. Kinder, Jr., Carl R. Griffin, Jr. and Samuel L. Belknap to a nominating committee to bring in a slate of officers for consideration in January.

Dr. Henry A. Hudson introduced Dr. Griffin, who introduced

Dr. Richard M. Swengel, neurosurgeon from Lewiston. Dr. Swengel spoke about newer trends in the treatment of pain.

A meeting of the Lincoln-Sagadahoc County Medical Society was held on January 19, 1971 at The Ledges in Wiscasset, Maine. The meeting was called to order at 9:15 p.m. by the President, Dr. Arkadij Oceretko.

The minutes of the last meeting were read and accepted as read. The Treasurer's Report was read as recorded and accepted as read.

Dr. Edward L. Kinder, Jr. presented the report of the nominating committee:

President, Dr. Frank O. Avantaggio, Jr., Damariscotta  
Vice-President, Dr. Anthony J. Keating, Bath  
Secretary-Treasurer, Dr. George W. Bostwick, Newcastle  
Delegates to the M.M.A. House of Delegates, Drs. Nelson P. Blackburn, Bath and Mary J. Tracy, Damariscotta. Alternates, Drs. Alfred T. Holt and Richard C. Leck, both of Bath.

Censors, Drs. John F. Dougherty, Bath, Carl R. Griffin, Jr., Boothbay Harbor and Samuel L. Belknap, Damariscotta

Program Committee, Drs. Henry A. Hudson, Southport Island and Nelson P. Blackburn

The slate was moved as presented for one single vote; approval was unanimous.

Dr. Bostwick stated that a communication from Dr. William W. Conner shows he is no longer in a residency program but is practicing medicine. A letter sent to Dr. Alexander G. Stetkevych at his latest known address was returned by the P.O.D. as "Moved, Left No Address." Dr. Joseph A. Marc did not answer an enquiry, but he is stated to be no longer in a residency program. The secretary was instructed to remove their names from the rolls of Junior Members, with the notation that they were members in good standing throughout.

Dr. Samuel L. Belknap stated that physicians at Brunswick Naval Air Station have been interested in meetings of this Society but have not been invited. The Secretary was instructed to send meeting notices to "Senior Medical Officer B.N.A.S."

Dr. Oceretko stated that the appointed committee to study Constitution and Bylaws never met. Dr. Bostwick accepted the blame for this oversight.

Dr. Blackburn introduced Dr. Sunny J. Bullington who spoke on Ophthalmodynamometry.

GEORGE W. BOSTWICK, M.D., *Secretary*

#### ANDROSCOGGIN

The meeting of the Androscoggin County Medical Association was held at the Central Maine General Hospital in Lewiston, Maine on October 15, 1970.

The meeting was opened at 8:40 p.m. by the President, Dr. Lionel R. Tardif, with twelve members present. Dr. Charles W. Eastman, M.M.A. Councilor, was present.

The application for reinstatement of Dr. Frederic J. Caron was voted on favorably and the application of Dr. Robert F. Kraunz was voted on favorably.

Dr. Eastman spoke on the MEDEX program as discussed at the Council meeting.

The following is the result of the election of officers at the Annual Meeting of the Corporators which was held on December 23, because of the storm the previous week:

President, Dr. Charles W. Steele, Lewiston  
Vice-President, Dr. Thomas F. Shields, Lewiston  
Secretary-Treasurer, Dr. Donald L. Anderson, Lewiston  
Councilor, Dr. Stanley E. Rosenblatt, Lewiston  
Delegates to the M.M.A. House of Delegates, Drs. Charles W. Steele, Joseph J. Rando, John W. Carrier, Thomas F. Shields and Gilbert R. Grimes, all of Lewiston. Al-

ternates, Drs. J. Paul Nadeau, Daniel R. Shields, Cyprien L. Martel, Jr., Ralph Zanca and Lionel R. Tardiff, all of Lewiston

DONALD L. ANDERSON, M.D., *Secretary*

#### HANCOCK

The 429th Hancock County Medical Society meeting was held on December 9, 1970 at the Brookside Restaurant in Ellsworth, Maine, with thirteen members and two guests present.

An address was heard by Dr. Joe R. Wise, Jr., a recently arrived internist in Bangor, Maine, practicing cardiology. His commentary, entitled "Lipids in Medical Practice," elicited the present classification and treatment of the rudimentary clinical and laboratory types. A discussion followed, indicating a keen interest by the attendants.

The annual financial report of the Society was heard and accepted.

The nominating committee presented a slate of officers for the Society for the coming year which was adopted by the Society as follows:

President, John G. Murray, Jr., M.D., Blue Hill  
Vice-President, Neal H. Isil, M.D., Ellsworth  
Secretary, Bradley E. Brownlow, M.D., Blue Hill  
Delegates to the M.M.A. House of Delegates: Drs. Richard W. Britt, Blue Hill and Winston G. Stewart, Bar Harbor. Alternates: Drs. John C. Van Pelt and George G. Fuller, both of Ellsworth  
Censors, Drs. Llewellyn W. Cooper (3 yrs.) and Robert D. Wilson (2 yrs.), both of Bar Harbor, Robert C. Granger (1 yr.), Blue Hill.

BRADLEY E. BROWNLOW, M.D., *Secretary*

#### KENNEBEC

The Kennebec County Medical Association met at the Silent Woman Restaurant, in Waterville, Maine on November 19, 1970. Following a social hour and dinner (served to sixty-one members and guests), the business meeting was opened by the President, Dr. George I. Gould.

The minutes of the last meeting were read and accepted. The names of two new candidates were announced for membership: Drs. Padiath Ali Aslam, Augusta and Karl E. Sanzenbacher, Waterville.

A Nominating Committee to prepare a slate of officers for the Association's Annual Meeting in December was appointed, to consist of Drs. Ivan E. McLaughlin, Chairman and Loring W. Pratt.

Dr. Gould then introduced the evening's speaker, Dr. Manu Chatterjee, Program Coordinator, Regional Medical Program of Maine, who spoke on the topic, "A Medical School for Maine." Dr. Chatterjee reviewed the background of medical care and medical educational needs in the State and thoroughly reviewed the rationale for establishing a new kind of medical school in Maine which would primarily train family practice physicians. The proposed school would utilize existing higher educational facilities already present in the State and their faculties, as well as the many hospitals and their existing medical staffs. Dr. Chatterjee's topic stimulated an unusually wide-spread and thoughtful degree of audience participation as evidence of genuine membership interest in this timely subject.

The meeting was adjourned by the President, Dr. Gould at 9:30 p.m.

The Kennebec County Medical Association met at the Silent Woman Restaurant in Waterville, Maine on January 21, 1971. Following a social hour and dinner served to forty-one members and guests, the business meeting was opened by the President, Dr. George I. Gould. The minutes of the November 1970 meeting were read and accepted; the Annual December Meeting having been postponed to this date because of bad weather.

Two new candidates for membership were unanimously



elected, namely: Drs. Padiath Ali Aslam and Karl E. Sanzenbacher. Report of the Nominating Committee was then given by Dr. Ivan E. McLaughlin, Chairman, and the following slate of nominated officers, councilors, delegates and alternate delegates were then duly elected:

President, Paul A. Jones, Jr., M.D., Waterville

Vice-President, John C. Patterson, M.D., Augusta

Secretary-Treasurer, Francis A. Spellman, M.D., Togus

Delegates to the M.M.A. House of Delegates: Drs. Richard T. Chamberlin, Earle M. Davis, Samson Fisher and Valentine J. Moore, all of Waterville; Drs. Richard E. Barron, Winthrop and George I. Gould, Richmond. Alternates: Drs. Brinton T. Darlington, John D. Denison, Terrance J. Sheehan and John H. Shaw, all of Augusta; Drs. Raymond E. Culver and Albert A. Poulin, both of Waterville

Councilors, Drs. Francis J. O'Connor, Augusta (1 yr.), Richard R. Dole, Waterville (2 yrs.) and William E. Schumacher, Augusta (3 yrs.)

The business was then conducted by the new President, Paul A. Jones, Jr. of Waterville. Under new business, Dr. Chamberlin, speaking for the Association's Delegates, briefly reviewed a summary of the House of Delegates' action taken in a special meeting on December 13, 1970. Dr. Schumacher moved, and Dr. Ohler seconded the motion, that our Association circularize to our Membership with reasonable promptness, this summary of the House of Delegates Special Meeting. This motion passed unanimously.

The evening's scientific program was given by Capt. Earland E. Hedblom, M.C., U.S.N., Senior Medical Officer, Brunswick Naval Air Station. Capt. Hedblom gave a thorough and fascinating discussion of problems encountered in the field of Cold Weather Medicine. Capt. Hedblom drew from his extensive experience in the Antarctic in association with Operation Deep Freeze and illustrated methods of handling cold weather injuries,

proper cold weather clothing and survival techniques, first aid under cold weather conditions and discussed the psychiatric aspects of exposure to cold. After an enjoyable discussion period, the meeting was adjourned by the President, Dr. Jones at 10:15 p.m.

FRANCIS A. SPELLMAN, M.D., *Secretary*

## CUMBERLAND

The 357th meeting of the Cumberland County Medical Society was held at Valle's Steak House in Portland, Maine on January 21, 1971. There were seventy-eight members and guests in attendance including the President of the Maine Medical Association, Dr. Charles R. Glassmire, and the District I Representative, Dr. Robert F. Ficker. A pleasant social hour preceded an excellent dinner of a 10 ounce sirloin steak.

The meeting was called to order by the President, Dr. George F. Sager and the minutes of the previous meeting in November were read and accepted by the Society. A snowstorm cancelled the scheduled meeting of December 18, 1970.

The applications for membership of Drs. John D. Kilgallen and Myron K. Krueger were read for the second time. It was moved, seconded and voted to accept them into membership of the Cumberland County Medical Society. The applications of Drs. Hugh Johnston and Ernest Keen were read the first time and referred to the Credentials Committee.

The resolution on the death of Dr. Frank S. Broggi was read by Dr. Benjamin Zolov. It was resolved that this resolution be spread on the records of the Cumberland County Medical Society and that a copy be sent to his family.

The Society was next addressed by Dr. Charles R. Glassmire in his capacity as President of the Maine Medical Association. The Society, as individual members, was urged to become more active and more interested in the work and the goals of the Society in general, to attend meetings, and to stay to the end so that no further important issues would be decided on a 6-5 vote.

Next, the annual reports of the committees were read. Dr. Howard P. Sawyer, Jr. reported on the work of the Legislative Liaison Committee during 1970. Dr. Richard S. Hawkes reported the activities of the Grievance Committee for the year of 1970. Dr. Winton Briggs then reported for the Utilization Review Committee of the Extended Care Facilities of Greater Portland. The report of the Health Careers Committee was given by Dr. Robert E. McAfee, and Dr. Robinson L. Bidwell read the report of the Medical-Legal Liaison Committee. The report by Dr. Albert Aranson on the Health Insurance Committee of the Maine Medical Association was largely given over to his resignation from this committee as the representative from Cumberland County and his hope that more realistic advances might be realized by this committee in the future. Dr. Robert H. Pawle reported for the Bylaws Committee and a report of the Treasurer was read and accepted by the Society.

Going on to old business, the Society took up the proposed Bylaw changes. These changes would delete Chapter 6, Section 2, and replace it in total with a new Section 2. There was a great deal of discussion about this particular change in the Bylaws. Part I was actually defeated twice and reconsidered three times, finally passing the required two-thirds majority. Part 2, paragraphs A, B, C & D passed easily. Part 3 passed. Part 4 was amended so that no member should immediately succeed himself. In its amended form, it was moved that the Bylaws change be accepted by the Society and the Society gave unanimous approval to this change.

The Society moved on to the report of the Nominating Committee as given by Dr. Charles W. Capron. The Nominating Committee gave the following slate of officers:

President, Lawrence Crane, M.D., Portland

Vice-President, Sidney R. Branson, M.D., South Windham

Secretary-Treasurer, Douglas R. Hill, M.D., South Portland

Delegates to the M.M.A. House of Delegates, Drs. Howard

P. Sawyer, Jr., Charles E. Skillin and Alfred E. Swett, all

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of Portland; Dr. Robert H. Pawle, Falmouth; Dr. Harold N. Burnham, Gorham and Dr. Kirk K. Barnes, Brunswick. Alternates: Drs. Walter B. Goldfarb, Stanley W. Kent, Henry B. Finks and Paul R. Minton, all of Portland; Dr. Lloyd G. Davies, Cape Elizabeth and Dr. Wilhelm H. J. Van Deventer, Brunswick

Executive Committee, Dr. Douglass C. Pennoyer, Portland Ethics Committee, Dr. Ferris S. Ray, Portland

There were no further nominations from the floor. The Society voted unanimously to accept the slate of officers as proposed.

The Society then listened to a farewell address by retiring President, Dr. Sager, expressing his thanks to those who had been helpful to him through his two years of presidency and pointing out some of the areas that he thought the Cumberland County Medical Society should consider as new horizons toward which they might work.

Dr. Crane then assumed the podium and presented to Dr. Sager a memento expressing the Society's deepest appreciation for the excellent leadership, good judgment, and calm manner in which he led the Society during 1968-1970.

The meeting was adjourned at 10:30 p.m. and the members dispersed into yet another snowstorm.

DOUGLAS R. HILL, M.D., *Secretary*

## YORK

The annual meeting of the York County Medical Society was held on January 13, 1971 at the Officers Club, U.S. Navy Yard, Kittery, Maine. It was a combined meeting of this group and its auxiliary. Approximately ninety physicians and their wives and guests attended the annual meeting. Following a social hour and dinner, separate business meetings were held followed by dancing and entertainment by Mr. Clyde Joy, Station WMUR, Manchester, New Hampshire.

Captain Russ Fisichello, Commandant of the U.S. Naval Hospital, served as host. The highlight of this meeting was the Presentation made by Dr. Maurice Ross, retiring President, of an inscribed silver bowl to Dr. Charles W. Kinghorn, in recognition of "forty years of meritorious and faithful service" to the Society as Secretary-Treasurer.

Speakers were Captain Kern, USN, Commandant of the Shipyard; Captain Fisichello, USN, Commandant of the U.S. Naval Hospital at Kittery; Dr. Charles R. Glassmire, Portland, President of the Maine Medical Association and Dr. Thomas A. Martin of Portland.


A short business meeting was held by each group. At the physicians' meeting, a slate of officers, delegates and committees was presented by the Nominating Committee, which consisted of Drs. Melvin Bacon, Alvin A. Hoffman and G. Patrick Shaw and were unanimously voted into office.

President, Harry Eisberg, M.D., Biddeford  
Vice-President, Ruth E. Endicott, M.D., Ogunquit  
Secretary-Treasurer, Charles W. Kinghorn, M.D., Kittery  
Assistant Secretary-Treasurer, Melvin Bacon, M.D., Sanford  
Executive Committee, Drs. Carl E. Richards, Sanford, Walter R. Peterlein, Jr., Springvale, and the new officers  
Delegates to the M.M.A. House of Delegates, Drs. Richards, Paul S. Hill, Jr., Saco and Thomas Anton, Biddeford. Alternates: Drs. Kenneth E. Leigh, York, Maurice Ross and Roger J. P. Robert, both of Saco  
Censors, Drs. Marion K. Moulton, West Newfield and Drs. Hill and Ross

During the business meeting, the Society voted to increase fees for office calls to a minimum of \$7.00 and house calls to a minimum of \$10.00.

The Goodall Hospital, Sanford, Maine was selected as the site for the March meeting. The committee selected by President Eisberg was Drs. Richards and Bacon, to make arrangements.

CHARLES W. KINGHORN, M.D., *Secretary*



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# The Journal of the Maine Medical Association

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## Health Science Education: Medical School Component

EDWARD Y. BLEWETT, Ed.D.\* and MANU CHATTERJEE, M.D.\*\*

### INTRODUCTION

The current problems in the delivery of health services are immense. For several years, it has become increasingly evident that medicine is facing severe problems from which it cannot extricate itself unless our traditional approach to the problem is drastically revised.

There are many factors contributing to the present crisis, but chief among them are a shortage of practicing physicians, the gradual disappearance of the general practitioner, the increasing tendency of physicians to specialize and to orbit their professional services around specialized facilities, and the gradual extension of medical service eligibility through private and government-supported health insurance plans which creates a mushrooming demand from a shrinking resource.

The crisis is especially apparent in Rural America, and Maine, in many ways, is Rural America in microcosm. Our problems are America's problems with, of course, local variations.

It is interesting to reflect on Maine's relationship to the rest of the country. One hundred years ago this State led the Nation and often the world in establishing communications and trade with the rest of the world as a result of the extensive and superior shipbuilding and shipping capabilities. Later, Maine became the lumber center of the United States and, along with shipping, exerted a major influence on the economy of the entire country.

It is not often that Maine can become a National resource, but when it does, it does so with impressive results. Once again, we have the opportunity to make a major contribution to the State and the Nation through the design and implementation of a new program in medical education that is sensitive to current problems and relevant to current needs.

### PURPOSE

This is an MD-degree granting program whose purpose is to produce physicians capable of dealing with the medical care needs of the present and of the future through the development of a medical school with a new type nonconventional educational program. It is essential that this be a program of excellence which will fulfill the requirements of the appropriate accreditation committees. There is no intention of either creating or slipping into another traditional mold. The hazards of this occurring are fully appreciated. This region would be ill-advised to begin merely "another medical school," a "school for Maine."

The focus of the program will be the relationship of medicine to society: the necessity for total patient care, its meaning and significance. Major considerations include student selection, revisions of medical education curriculum, basic science/clinical science relationships, medical science/social science relationships, physician/paraprofessional interface, and undergraduate/graduate educational relationships. Methodological considerations include utilization of resources, cost effectiveness, education/research/service cost components and methods of financing.

### METHOD

A new instructional approach is necessary for a medical school for Maine to be a feasible concept. This methodology can be outlined by considering the philosophies governing the student selection process and the design of a curriculum.

#### *Student Selection:*

Three years of college might be one admission guideline but a demonstration of academic ability, social and natural science aptitude, and maturity will be the determining factors which might modify the application of this guideline in either direction.

A comparison of the number of freshmen entering five

\*Consultant to the Chancellor for Health Science Education, University of Maine, Orono, Maine 04473.

\*\*Program Coordinator, Maine's Regional Medical Program, Augusta, Maine 04330.



Maine institutions who have declared themselves "pre-med" majors and those finally applying to medical school indicates an early attrition rate of significant proportions. A medical school admission policy that is directed to students highly motivated to enter the health field and who have demonstrated an ability to handle both the natural and social science languages will add a new manpower pool oriented toward the practice of primary medicine.

#### *Non-Clinical Curriculum:*

The central focus of the non-clinical curriculum will be the relationship of the basic sciences, social sciences, and humanities to the practice of medicine. Self-instruction programs and the faculties and facilities of the University of Maine and Maine's private colleges will be the main resources applied to this portion of the curriculum. The intention is to utilize these resources to obviate the need for creating separate medical school science departments and to establish a programmatic rather than departmentalized non-clinical curriculum.

Instruction in the social sciences and the humanities will be continuous throughout the basic science and clinical years of the program. The involvement and leadership of physicians in cooperative and innovative programs for the delivery of health services to the "total patient" depends on their awareness of needs and problems, their exposure to alternate solutions, and their awareness of the basic philosophical, economic, and social implications of their decisions. The faculty is available in the State to provide this educational dimension.

#### *Clinical Curriculum:*

Maine's community hospitals will be the chief foci for clinical education and training providing the facilities, patient material, and teaching faculties for this portion of the program. The fifty voluntary hospitals range from 12 to 573 acute beds and constitute a teaching capability of enormous proportions covering the full spectrum of medical care situations. Also available is an 849-bed Veterans Administration Hospital. In addition to the usual clinical education, these institutions also have a capability for teaching such subjects as anatomy, pathophysiology and bacteriology.

#### *Community-Oriented Curriculum:*

The State of Maine offers a unique setting for giving the medical student a chance for involvement in community health problems.

There has developed an extensive community capability for educational purposes. In addition to exposure to this situation, by spending a period of time working with the Model Cities Programs, Kennebec Valley Regional Health Agency, Community Action Programs, and in small, community hospitals supporting physician-less clinics, the medical student will acquire an appreciation for the range of problems and solutions which exists at the community level in the isolated rural areas and inner cities of the State.

A close liaison with the educational and activity programs of the emerging new health professionals and allied health workers will be a major part of the clinical instructional experience. The need for defining and employing the team approach to medical care is a National problem.

#### *Instructional Plan:*

A three-year program is proposed. The learning environment will be designed to provide the student with a multidimensional array of opportunities including direct access to self-study materials, recorded (video and audio) clinical lectures and discussions, and an on-line connection to a computer for stored factual information, self-instruction and evaluation, and simulation of clinical encounters. Seminars and demonstrations using live, interactive television between remote locations will be included where needed and feasible. Hardware for such purposes already exists between Maine and Boston, and Maine and Burlington.

All of these components must be combined with experiences and face-to-face teaching and discussion and fashioned into a flexibly-structured, variable path curriculum.

A faculty counselor for groups of students will be responsible for the quality and appropriateness of the educational experiences. During the three-year period, the student will be offered a series of didactic and practice learning opportunities at various locations in Maine. Self-study capabilities will be made available at the same central location as the administrative offices. Seminars will be held either at a central communications facility (remote seminar leader) or at various locations throughout the State in conjunction with the settings for clinical and community experiences. Clinical and community experiences will consist of a variable progression of clerkships arranged to satisfy individual career goals.

All designed and instructed for an education of quality, whose product, the new M.D., will stand equal to all tests and requirements of the several boards of licensure, but will more importantly, stand ready to handle with his colleagues the problems that may arise in total medical care.

#### CURRICULUM

The problems that the physician must deal with in the delivery of primary medical care will constitute the major emphasis of the educational process. These include diagnosis and treatment, prevention, disease detection, methods for delivering quality and quantity care, cost benefit relationships, use of paraprofessional personnel, and also the attractiveness of a life style.

The definition of these problems will be a combined effort of the Maine practicing community, the public, the Department of Health and Welfare, Comprehensive Health Planning agencies, and the voluntary health agencies plus outside consultants.

*Continued on Page 77*

# Septicemia Due to *Moraxella Liquefaciens*

D. P. SELLERS, M.D., JOE R. WISE, JR., M.D.,\* and HOWARD A. SEMER, M.D.

Serious infection due to *Moraxella* species, a pleomorphic gram-negative bacillus, is being reported with increasing frequency. This organism, previously thought to be of low pathogenicity, has recently been isolated from two patients with endocarditis.<sup>1,2</sup> In the following case, *Moraxella liquefaciens* was repeatedly isolated from the blood of a man with chronic lymphocytic leukemia and hypogammaglobulinemia.

## CASE REPORT

A 44-year-old white man with chronic lymphocytic leukemia since 1959 entered the hospital on February 5, 1967 complaining of fever, sweating, and muscle aches, particularly in the thighs, all beginning one week before admission. He had a history of frequent urinary tract infections and bronchitis. He had been taking chlorambucil (Leukeran®) 12 mgm. daily.

The temperature was 103.8° F and the pulse rate 120. There was a grade II/VI systolic ejection-type murmur, best heard at the apex, and was unchanged from previous examinations. The heart was not enlarged and the chest was clear. The liver and spleen, neither of which were previously enlarged, were palpated 3 cm. below the right and left costal margins, respectively. There were no embolic phenomena seen.

The white cell count was 39,000 with 96% lymphocytes and the hemoglobin 11 gms per 100 ml. The total serum protein was 5.9 gms. and gamma globulin 7.5%. Immunoelectrophoresis disclosed "moderate decrease" in both IgG and IgA and IgM was "not visualized."

On the third hospital day, he developed a maculopapular rash which appeared on the palms and soles, and to a lesser extent the forearms, legs, and back of the neck. The lesions were discrete, 3-5 mm in diameter and blanched with pressure. There was no pruritis. Eight blood cultures taken during the first three days of hospitalization grew gram-negative pleomorphic organisms subsequently identified by the Communicable Disease Center in Atlanta as *Moraxella liquefaciens*.

Intravenous penicillin, 20 million units daily was begun after the rash appeared. The myalgias, fever, and rash quickly subsided. He received ten days of intravenous penicillin and his subsequent course was uneventful.

## DISCUSSION

This is the first time *Moraxella* infection has been reported in an immunologically altered host. In a patient

like this with leukemia and hypogammaglobulinemia, however, it is not too surprising to encounter infections with unusual organisms such as these.

In the past, *Moraxella* species, a pleomorphic gram-negative bacillus, has seldom been reported as the cause of serious infection in man. *Moraxella liquefaciens* was previously thought only to produce conjunctivitis in man.<sup>3</sup> Recently, however, there appeared reports of two cases of bacterial endocarditis due to *Moraxella*.<sup>1,2</sup> Although our patient had a heart murmur, it was unchanged from previous examinations, and the evidence for endocarditis as the source of the septicemia was circumstantial. We could not determine whether the hepatosplenomegaly, which persisted, was due to leukemia or infection. The simultaneous occurrence of myalgias, and skin rash involving primarily the palms and soles has not been noted in the cases of *Moraxella* septicemia previously reported.

These organisms which have conventionally been considered of low pathogenicity are now being found capable of causing life-threatening infections, both in the altered and apparently normal subject.

## SUMMARY

A case of septicemia due to *Moraxella liquefaciens* in a 41-year-old man with chronic lymphatic leukemia associated with hypogammaglobulinemia is presented. The infection was accompanied by myalgias, and an unusual macular rash involving primarily the palms and soles. The patient responded readily to intravenous penicillin therapy.

## ACKNOWLEDGMENT

We are indebted to Dr. Robert E. Weaver of the Communicable Disease Center for identifying the organism, and to Dr. Jack A. Barnett for reviewing the manuscript.

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\*Member of Medical Staff, Eastern Maine Medical Center, Bangor, Maine 04401.



## Maine's Physicians Look to the 1970's

### An Analysis of Physician Attitudes Regarding Prepaid Group Practice, Utilization and Peer Review, and the Performance of Maine's Health Care System

MICHAEL J. MERRILL\* and FRANCIS T. FINNEGAN, JR.\*\*

Whatever changes occur in the nation's health care system in the 1970's are certain to affect the practice of medicine by more than 1,200 physicians in the State. The question both providers and consumers of health care ask is not whether change will come but what form it will take and who will assume responsibility for bringing about the changes. Physicians, perhaps more than any other group, have asked these same questions, and they have both indicated their feelings and made numerous suggestions regarding existing and proposed methods of delivering medical care.

Recently, Creative Health Systems, a nonprofit Maine corporation, under contract to Associated Hospital Service of Maine, conducted a study to determine the needs and desires for developing alternate organizational arrangements for the delivery and financing of medical care. Detailed results were included in a report entitled *Demand and Opportunity: Blue Cross-Blue Shield and the Development of New Health Care Systems*. A substantial part of the study involved seeking the opinions of both providers and consumers about new organizational arrangements. To help obtain this information, a survey was conducted among Maine physicians with the cooperation of the executive officers of the Maine Medical Association and the Maine Osteopathic Association. The summarized results of that survey are contained in this article.

Many physicians took time to write extensive comments related to the questionnaire and the health care system. These comments ran the gamut from professional self-criticism to the need for new programs to expressions of satisfaction with the present system. In the majority of cases, however, Maine's physicians expressed concern, recognized the problems, and emphasized the need for cooperation and flexibility in any attempts to change the system.

#### THE QUESTIONNAIRE AND METHODOLOGY

The questionnaire was designed to obtain the following information:

- An evaluation of the performance of the existing health care system in Maine;
- An evaluation of administrators and fiscal interme-

diaries for Medicare Part A, Medicaid, and Medicare Part B;

- Physician familiarity with various organizational and financial arrangements for the delivery of health care existing at this time in the United States;
- Opinions on the advantages and disadvantages of prepaid group practice arrangements;
- The number of physicians who would favor the establishment of some form of prepaid group practice and participate in it;
- An evaluation of the performance of utilization or peer review to date and what physicians think its function should be in the future;
- The level at which utilization or peer review should be administered and who should administer it;
- What physicians see as the number one priority in improving the existing health care system in Maine.

The questionnaire was pretested on the physician board members of Creative Health Systems and other physicians in the State. After significant revisions, the questionnaires were sent to 1,128 physicians on the regular mailing lists of both State Associations. Of the 941 M.D.'s who received the questionnaire, 51% (483) responded; of the 187 D.O.'s, 40% (75) responded.<sup>1</sup> On the basis of total numbers only, the M.D. sample is accurate within plus or minus three percent at a 95% confidence level of the response the total physician population would have made. In other words, the responses of M.D.'s to various questions are accurate within a six percent range 95% of the time.

The D.O. sample, however, is less accurate. Because of the low total numbers of D.O.'s and the 40% response, this sample is accurate only within plus or minus 9% at a 95% confidence level.

The characteristics – age, type of practice, specialty, and county – of the total physician population in the CHS sample are representative of the characteristics of the true physician population.<sup>2</sup> Generally, medical specialists

<sup>1</sup>. Considering the length and complexity of the questionnaire and the response of previous mail surveys, a 51% response is excellent. This response alone seems to indicate the degree of physician concern regarding the future of health care in Maine.

<sup>2</sup>. Characteristics of Maine's physician population are derived from two sources: the American Medical Association Service Bureau (Fisher-Stevens geographic master file on M.D.'s and D.O.'s) and the physician reporting system developed by the Health Facilities Planning Council and updated by the Maine Health Data Service Center.

\*Creative Health Systems, 11 Parkwood Dr., Augusta, Maine 04330.

\*\*Creative Health Systems, 11 Parkwood Dr., Augusta, Maine 04330.



and those not involved in the direct care of patients responded below the mean, and those in partnerships and surgical specialties above. However, the difference is not large enough to affect the accuracy of the sample to a great extent.

### SUMMARY OF FINDINGS

Space does not allow printing of the five-page questionnaire or detailed results. Therefore, the responses are summarized below in an attempt to extract the most significant findings and present them in a readable and manageable format. The figures cited below are the combined responses of M.D.'s and D.O.'s. Detailed results of each group are reported in *Demand and Opportunity*, but the differences in response between both groups are insignificant.

### PERFORMANCE OF THE EXISTING HEALTH CARE SYSTEM

Physicians are basically dissatisfied with the existing health care system in the areas of providing comprehensive and preventive care, and, to a lesser extent, in utilizing resources efficiently and effectively and providing care to the medically indigent.

They are satisfied with the system's ability to provide quality and night and emergency care, guarantee freedom of choice for physicians and patients, and ensure accessibility to care.

Approximately 400 of the 558 physicians who returned the questionnaire took the time to list the number one priority in improving the delivery of health care in Maine.

Comments on the number one priority broke down as follows:

1. The need for more health manpower, especially physicians and paramedics, and more equitable distribution of that manpower, especially in rural areas (170).<sup>3</sup>
2. The need for more health facilities (extended care facilities, hospitals, neighborhood health centers, rural clinics, and laboratories) and more efficient utilization of the existing facilities (30).
3. The need for medical schools and more continuing education for physicians (25).
4. The need to provide care to the medically indigent and rural populations (20).
5. The need for education of the consumers of health care (15).
6. The need to develop new organizational patterns – review mechanisms, medical foundations, etc. – to improve the delivery of health care (14).
7. Other priorities expressed by a number of physicians were: more efficient use of physicians' time, more comprehensive insurance coverage, preventive health care, improved doctor-patient relationships, freedom of physicians to determine how and where they will practice, better administration of medical

records and private practices, less government interference and red tape, better night and emergency care, and transportation.

### PREPAID GROUP PRACTICE

The term "prepaid group practice" as used in the questionnaire was defined as referring to health maintenance organizations, medical foundations, and similar arrangements for the delivery of health care. The term does not refer to prepaid insurance plans, e.g., Blue Cross-Blue Shield, and various group practice arrangements which exist at this time in Maine.<sup>4</sup>

Although salaried prepaid group practice plans, e.g., Kaiser-Permanente, and fee-for-service plans, e.g., medical foundations, have existed for some time in the United States, primarily in California, they do not exist in Maine and physicians in the State rate themselves as fairly unfamiliar with salaried arrangements and even less familiar with fee-for-service arrangements. However, responses to related questions indicate that their degree of understanding on some issues did indicate some familiarity with new arrangements.

Compared to existing arrangements for the delivery of health care, physicians felt that some form of prepaid group practice would result in significant improvements in the areas of comprehensive care (44%), utilization of resources (40%), preventive care (48%), use of allied health personnel (60%), distribution of night and emergency care (41%), use of physician time (44%), availability of consultants (47%), care for the medically indigent (34%), and shared medical knowledge (46%).<sup>5</sup>

Physicians felt, however, that prepaid group practice would result in poorer administration (29%), less physician incentive (51%), less freedom of choice (55%), lower income for physicians (26%), and less satisfactory physician-patient relationships (49%).

Significantly, the areas in which physicians felt prepaid group practice would result in improvements were the same areas – the provision of comprehensive and preventive care and the utilization of resources – in which they expressed dissatisfaction with the existing health care system.

When asked to evaluate various groups as potential

<sup>4</sup> Essentially, health maintenance organizations, medical foundations, and similar arrangements are forms of prepaid group practice, an elusive and confusing term misunderstood by many. Generally, any group of physicians meeting certain criteria in terms of numbers and diversification of specialties, whose subscribers have paid for health care in advance, either on a per capita (capitation) or other basis, for agreed-upon services, and who distribute the premium dollar according to some prearranged formula, whether it be fee-for-service, salary, or a combination, qualify under the definition.

<sup>5</sup> In all these cases, positive responses at least doubled negative replies. For example, 44% felt prepaid group practice would result in more comprehensive care, 12% less, 17% no change, and 27% did not know or did not respond, probably because the subject was unfamiliar.

<sup>3</sup> Numbers in parentheses indicate frequency of response.

administrators of prepaid group practice, physicians rated private third-party payors, e.g., Blue Cross-Blue Shield and commercial carriers, higher than State and Federal government agencies.

The logical conclusion drawn from these results is that physicians prefer the involvement of the private sector in the administration of new programs. Of the prepaid group practice arrangements which exist now, none are administered by the public sector. This trend may be reversed, however, with the possible adoption of national health insurance and the health maintenance organization concept proposed by the Nixon administration.

Three questions asked physicians whether they would favor and/or participate in some form of prepaid group practice. The purpose of these questions was to determine whether a climate exists in Maine for the introduction of new arrangements, particularly medical foundations, health maintenance organizations, and similar plans based on prepayment mechanisms, and whether physicians are willing to participate in prepaid group practice. The results indicate that such a climate does exist, especially for the development of pilot programs prior to full-scale development of new arrangements Statewide, and that physicians would participate.

Approximately 36% favor the establishment of some form of prepaid group practice in Maine. Another 34% do not, and 25% do not know. Of those who responded "no" or "don't know," 46% would favor the establishment of pilot programs.

When asked if they would participate in some form of prepaid group practice if satisfactory arrangements could be made, 55% said they would. Seventeen percent responded "no" and 21% "don't know."

Thus, a large percentage of Maine's physicians indicate significant interest in the development of new organizational and financial arrangements for the delivery of health care in Maine. Efforts by physicians themselves, both organized and individually, in this direction tend to support these findings. The Maine Medical Association and various county medical societies, for example, are discussing similar changes in the health care delivery system, including medical foundations and peer review mechanisms, at this time.

Physicians want to retain traditional fee-for-service arrangements but would consider salaried arrangements in certain circumstances. Fifty-four percent of the physicians preferred fee-for-service reimbursement in prepaid group practice, 7% salary, and 28% a combination of both. Therefore, it appears physicians favor the medical foundation concept over arrangements based on salary.

#### UTILIZATION AND PEER REVIEW

Semantics again confuse the issue when utilization and peer review are discussed. For purposes of this survey, CHS used the terms interchangeably primarily because of greater familiarity with the term "utilization review" and difficulties in distinguishing between the two.

The purpose of two questions regarding review was to determine how physicians evaluated the performance of existing review mechanisms and what function they think review mechanisms should ideally perform. Approximately 50% felt that existing review mechanisms result in better utilization of resources, but only 27% felt they resulted in lower costs and 33% in better quality care for the patient.

By contrast, however, 72% felt review should result in better utilization of resources, 52% in lower costs, and 65% in better quality care. The majority of others who responded felt no change would result or has resulted because of review procedures. The conclusion is that review mechanisms to date have not performed as well as they should.

Physicians rated themselves quite familiar with utilization at the hospital level, fairly familiar with utilization review by third-party payors, and not very familiar with peer review in medical foundations and as proposed by the Bennett Amendment. However, recent developments, particularly the efforts of the Maine Medical Association to bring peer review to their members' attention, would probably change the results of this question if asked today.

More than 60% felt that utilization or peer review was desirable and 58% that it was necessary. Only 17% felt utilization or peer review was undesirable and 18% that it was unnecessary. The remainder were "don't know" or "no response." It appears, then, that physicians understand the function of utilization and peer review and accept the concept as an integral part of health care delivery.

Approximately 45% of the physicians felt that utilization or peer review should be conducted at the local level. Next in order of importance were local/county (8.5%), regional (8%), county (7%), local/regional, local/State, State, county/regional, regional/State, county/State, and so on. From these results it appears physicians want to keep review as close to home as possible.

A clear majority of physicians chose professional associations (33%) and hospital committees (25%) as administrators of utilization or peer review. Another 21% believed that a combination of professional and hospital associations was the best choice. Third-party payors were virtually eliminated. Thus, even though physicians accept the concept of peer review, they definitely want control over its operation.

Only 22% felt that utilization or peer review should include the review of the admission of patients for elective care prior to the date of actual admission.<sup>6</sup> More than 50% said it should not.

<sup>6</sup>. The Medical Care Foundation of Sacramento uses this formula, called CHAP (Certified Hospital Admission Program), as part of its review procedure. Basically, it is a prospective hospital utilization program combining preadmission and concurrent peer review to determine the medical necessity for hospital admission and length of stay.



## SUMMARY

Three conclusions emerge very clearly: the climate for developing new programs in Maine is favorable; the private sector, utilizing a pluralistic, flexible approach to program development, should assume leadership in bringing about needed changes; and pilot programs must be developed and evaluated prior to full-scale program development.<sup>7</sup>

In the months ahead, further analysis of questionnaire results might be done to determine attitudes in certain geographic areas and among certain physician population segments, e.g., general practitioners.

For example, physicians under age 54, in partnership or group practice arrangements, and practicing medical

specialties, responded above the mean response of the total sample on participation in prepaid group practice, in some cases substantially higher. Those over age 55, in solo practice, and surgical specialists or general practitioners, tended to respond below the mean. A number of counties — Cumberland, Franklin, Hancock, Kennebec, Penobscot, Piscataquis, Sagadahoc, Waldo, Washington, and York — responded slightly or substantially above the mean. Most of the rest responded substantially below. Analysis of this sort is important to the development of pilot projects and the selection of project sites.

Nonetheless, questionnaire surveys have their limitations. Results from such surveys, especially in the development of new programs which may affect tens of thousands of people, should be used as only one of many tools. That the results of this survey are indicative of physician attitudes regarding change is true, but any program, new or old, can succeed only with active physician participation and leadership.

<sup>7</sup> CHS also conducted surveys among hospital administrators, labor leaders, and health planners regarding the same questions. These results substantiated and strengthened the results from the physician questionnaire.

## HEALTH SCIENCE EDUCATION: MEDICAL SCHOOL COMPONENT

*Continued from Page 72*

Recent new directions in medical school educational methodologies are being studied in detail. It is planned to draw on these experiences. Student participation in total curriculum design, admission and administrative policies is in progress. A two-day student workshop was held in August 1970 for initiating student involvement in the program.

## PROGRESS TO DATE

- Commitment from the Maine community is extensive and includes the Maine Medical Association, Maine Osteopathic Association, Veterans Administration, Department of Health and Welfare, the State Governor's office and a significant segment of the Legislature.
- Many of the undergraduate colleges have assisted in the program development to date.
- Of special importance is the recent decision of the Board of Trustees of the University of Maine to assign the development of a Health Science Center within the University priority ranking, including the thorough study of a medical school concept as outlined herein. A Consultant to the Chancellor

for Health Science Planning has been appointed, as has an Advisory Council on Medical Education specifically charged with investigating alternatives for supplying physicians including medical school planning within the University.

- Extensive support has been given by educational institutions outside the State.
- A request for \$75,000 for planning-implementation has been submitted to the 105th State Legislature as a part of the Governor's State surplus budget. This, if approved, will be matched from Federal sources on at least an equal basis.
- The Bureau of Health Manpower and the Veterans Administration have encouraged further development and are awaiting State legislative commitment.
- Strong interest and encouragement has been given by the Association of American Medical Colleges and the American Medical Association whose liaison committee is the major accrediting body.
- The next essential step is the specific definition of a curriculum and the subsequent matching of resources. The need is urgent and implementation should be carried out as soon as possible.



## Special Article

A "Current Status" Report concerning Maine students who have graduated from the University of Vermont College of Medicine under the aegis of the New England Higher Education Compact during the years 1961-1970.

GEORGE T. NILSON, M.P.H.\*

*Background:* Expansion of opportunities within New England for medical and dental education was the primary concept behind the New England Higher Education Compact. The first effort of the New England Board of Higher Education was to implement this idea. Arrangements were made during 1958-59 whereby certain states, i.e., Maine, Massachusetts, New Hampshire and Rhode Island – would provide subsidy for such of their residents as were admitted for these studies to schools within the region. One condition for this subsidy was a guaranteed expansion of enrollment. It was on this point that those early arrangements failed, since the private colleges of medicine and dentistry were unable to meet this condition. Although a few students were enrolled at the private schools under this program in its first year, the Board discontinued this part of the activity and proceeded to arrange contracts between the four states and the College of Medicine at the University of Vermont where expansion of enrollment had taken place. These contracts were signed in 1960 and 1961. They provided that:

1. The University of Vermont would guarantee places for specified quotas of qualified students from each state, and would charge each enrolled student only the in-state tuition fee.
2. The contracting states would provide, toward the cost of education for each enrolled student, an annual payment of \$2,500.00†
3. These state payments would be processed through the New England Board of Higher Education, which would also certify the residential eligibility of all applying students, and render appropriate accounting.

The quota of Maine students began at fifteen (15) per academic year for all four classes in September 1961. The enrollment of Maine students by year and number is listed below.

Year	Number of Maine Graduates
1962	4
1963	3
1964	3
1965	1
1966	3

Year	Number of Maine Graduates
1967	6
1968	4
1969	2
1970	3

As will be noted above, it was not always possible to recruit a sufficient number of qualified Maine students to meet the quota guarantee set by the contract. One can infer from this fact that more effective pre-medical counseling at both the secondary school and college level in Maine is badly needed.

Over the ensuing years, this quota has been increased and now stands at thirty (30). Although the question of committed service (indenture) has been raised upon occasion, this has never been required of the participating students. This follow-up study was undertaken for the purpose of securing information as to the present whereabouts and future plans of these young physicians.

### FINDINGS

Total number of University of Vermont College of Medicine graduates from the State of Maine assisted under the New England Regional Medical Student Program in the years 1962 through 1970 . . . . . (29)

Number responding to follow-up questionnaire (26)

#### I. Present Status

Military Service . . . . .	( 5 )
Military-Internship . . . . .	( 2 )
Military-Residency . . . . .	( 1 )
Internship . . . . .	( 2 )
Residency . . . . .	(12)
‡‡In Practice . . . . .	( 3 )
Other . . . . .	( 1 )

#### II. Future Plans

Private Practice . . . . .	(19)
Institutional Practice . . . . .	( 5 )
Other . . . . .	( 2 )

†This subsidy has recently been increased to \$5,000, subject to the availability of funds appropriated by each state legislature.

‡‡All three of these physicians are presently practicing in Maine communities.

\*New England Board of Higher Education, 20 Walnut Street, Wellesley, Massachusetts 02181.

A. *Location*

Maine . . . .	(17)
Hawaii . . . .	(1)
Undecided . . . .	(8)

B. *Size of Community*

5,000 to 10,000 . . . .	(1)
10,000 to 25,000 . . . .	(7)
25,000 to 100,000 . . . .	(12)
100,000 to 500,000 . . . .	(3)
over 500,000 . . . .	(0)

C. *Type of Practice*

Family Practice . . . .	(0)
Specialty . . . .	(25)
Other (full-time teaching) . . . .	(1)

1) *Specialty Preferences*

Anesthesiology . . . .	(4)
ENT . . . .	(1)
General Surgery . . . .	(2)
Internal Medicine . . . .	(4)
Orthopedic Surgery . . . .	(1)
OB-GYN . . . .	(3)
Ophthalmology . . . .	(2)
Pathology . . . .	(2)
Pediatrics . . . .	(2)
Psychiatry . . . .	(1)
Radiology . . . .	(2)
Undecided . . . .	(1)

III. *General Comments Made by the Respondents*

Several commented that the program was essential in allowing them the privilege of attending medical school. One respondent reported that the NEBHE-UVM Program is an absolute necessity, since it, in effect, makes University of Vermont

Maine's "state" medical school. "Maine should buy more places at UVM for medical students which are a bargain in contrast to the expensive alternative of building its own medical school." Another person reported, "this plan (NEBHE-UVM) is far more practical and, I believe, much more economical than having a medical school in Maine. Another point of view was expressed by one respondent who said, "although the contractual arrangement with the University of Vermont has been very timely in helping Maine residents obtain medical education, the need for a medical school for Maine is essential in my opinion."

IV. *Summary*

One-third of all the 98 Maine residents presently enrolled in all medical schools are attending the University of Vermont College of Medicine under the aegis of the New England Higher Education Compact. The guaranteed places for Maine residents at UVM College of Medicine gives the youth of Maine preferential consideration that they do not receive elsewhere.

When viewed against the experience of other states in developing public medical schools, it is the opinion of the writer that Maine is getting a good return for its modest investment of the past decade in the University of Vermont regional medical student program. The "cost-effectiveness" of the program will become increasingly attractive in the next few years as these young doctors complete their residency training and military obligations and take up practice in communities around the State.

## ANNUAL MEETING DATES FOR YOUR 1971 CALENDAR

Maine Medical Association, June 13-15 at The Colony, Kennebunkport, Maine

American Medical Association, June 20-24 at Atlantic City, New Jersey

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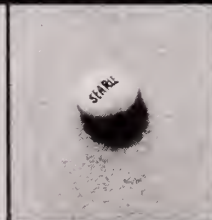
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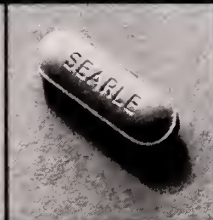
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Pro-Banthine 15 mg.  
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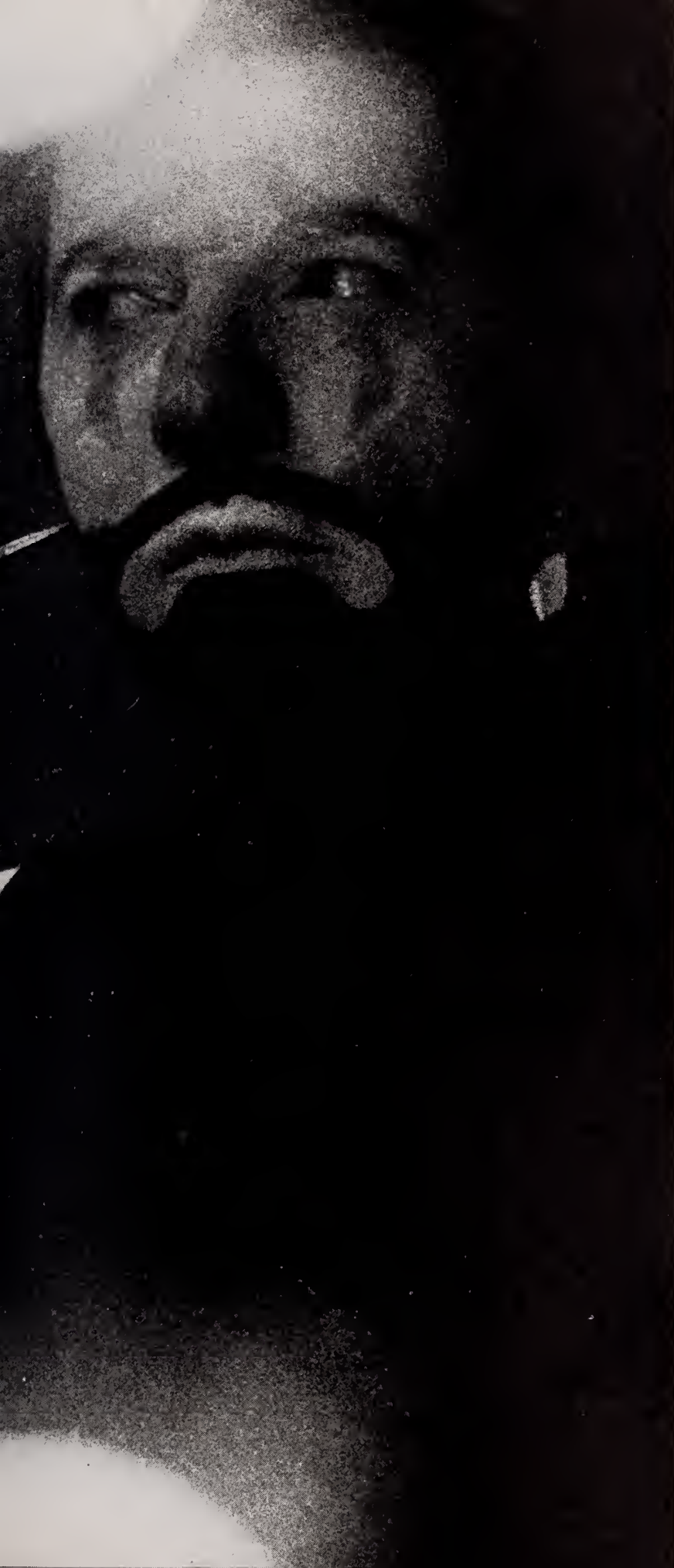


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# Pro-Banthine® (propantheline bromide)

**Indications:** Peptic ulcer, gastroenteritis, pylorospasm, biliary dyskinesia, functional hypermotility and irritable colon.

**Contraindications:** Glaucoma, severe cardiac disease.

**Precautions:** Since varying degrees of urinary hesitancy may occur in elderly men with prostatic hypertrophy, this should be watched for in such patients until they have gained some experience with the drug. Although never reported, theoretically a curare-like action may occur with possible loss of voluntary muscle control. Such patients should receive prompt and continuing artificial respiration until the drug effect has been exhausted.

**Side Effects:** The more common side effects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

**Dosage:** The maximal tolerated dosage is usually the most effective. For most adult patients this will be four to six 15-mg. tablets daily in divided doses. In severe conditions as many as two tablets four to six times daily may be required. Pro-Banthine is supplied as tablets of 15 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg. The parenteral dose should be adjusted to the patient's requirement and may be up to 30 mg. or more every six hours, intramuscularly or intravenously.

**Pro-Banthine® 15 mg.**  
(propantheline bromide)  
with

**Dartal® 5 mg.**

(thiopropazate dihydrochloride)

**Indications:** Peptic ulcer, spastic constipation, nonspecific gastritis, functional gastrointestinal disorders, pylorospasm, hyperhidrosis, irritable bowel syndrome, mucous or ulcerative colitis, functional diarrhea.

**Contraindications:** Glaucoma, severe cardiac disease.

**Warnings:** Pro-Banthine with Dartal should not be administered to patients who are under the influence of barbiturates, alcohol or narcotics. The drug should be administered cautiously to epileptic patients or those in depressed states, patients with liver disease and to pregnant women. Hypersensitivity to Dartal may occur rarely in patients with known sensitivity to similar drugs.

**Side Effects:** Dryness of the mouth, mydriasis, hesitancy of urination; less commonly extrapyramidal (restlessness, dystonia and signs of pseudoparkinsonism such as muscular rigidity, fixed facies, tremor, ataxia, festinant gait and drooling), parasympatholytic (blurred vision, xerostomia, hypotension, nasal congestion and constipation) and curare-like (loss of control of voluntary muscles, particularly the muscles of respiration) reactions. Rarely, leukopenia or allergic purpura. A generalized erythematous skin reaction may occur. Side effects characteristic of phenothiazines such as grand mal convulsions, altered cerebrospinal proteins, cerebral edema, potentiation of the effects of atropine, heat or phosphorus insecticides, autonomic reactions, endocrine disturbances, reversed epinephrine effect, hyperpyrexia or pigmentary retinopathy may theoretically occur but have not been reported with Dartal. Severe hypotension following recommended doses occurs more commonly in patients who are also afflicted by other medical disorders such as mitral insufficiency or pheochromocytoma, and particular attention should be paid to such a possibility although this has not been observed with Dartal.

**Adult Dosage:** One tablet three times a day.

**Pro-Banthine® 15 mg.**  
(propantheline bromide)  
with

**Phenobarbital 15 mg.**

**Warning:** May be habit-forming.

For **Indications**, **Contraindications**, **Precautions**, **Side Effects** and **Dosage** see Pro-Banthine. In addition, phenobarbital should be administered with caution to patients with liver disease, mental disturbances or a significant degree of hypoxia.

**Pro-Banthine P.A.®**

prolonged acting brand of propantheline bromide  
For **Indications**, **Contraindications**, **Precautions** and **Side Effects** see Pro-Banthine.

**Dosage Form:** Capsule-shaped, compression-coated, peach tablets of 30 mg. for oral use.

**Dosage:** The recommended initial dosage is one tablet in the morning and one at night.

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**Monday, June 14**

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  - Section on Ophthalmology of the M.M.A.
  - Maine Thoracic Society and the Maine Society of Internal Medicine
  - Maine Society of Anesthesiologists
  - Maine Psychiatric Association
  - Maine Trauma Committee
  - Maine Academy of Orthopedic Surgeons
- Annual Banquet
  - Featured Speaker

**Tuesday, June 15**

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- Specialty Groups
  - Maine Medico-Legal Society
  - Ear, Nose and Throat Group
  - Maine Radiological Society
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## State of Maine

# Department of Health and Welfare

## Drug Abuse: The Need for Professional Cooperation

R. STEPHEN DRANE, Ph.D.\*

While the stir around hallucinogenic drug abuse is a somewhat recent phenomena, drug abuse itself has been around a long time in various forms. Some sources say that there has never been a culture without some drug use. Furthermore, the problem of defining abuse is like defining "weeds." It is not the plant itself that is a weed but its problem of "growing out of place" that determines its negative quality. This quality is always culturally determined by the values, pressures and viewpoints of a certain group at a certain time. Likewise, the definition of "hard" drugs and "soft" drugs is confusing as well. Current medical research has shown that there is probably more physical damage from amphetamines and deaths from barbiturates than were previously known with the so-called hard narcotics or derivatives of opium.

Who are the "authorities" in drug abuse? We are naturally cautious about such titles given to people, particularly in this area. Drug abuse awareness needs an understanding of various fields of study, various disciplines. In a lecture November 5, 1970, Dr. Matthew Dumont spoke about drug abuse and politics from Tufts Medical School. He brought out that *previous* distinctions in drug abuse had to do with income, class and family disruptions. Currently, he said anyone would be hard put to draw these distinctions. Random samples could be taken, he suggested, from any section of our culture and find almost similar percentages of drug abuse even though the *kinds* or types of drugs may vary. Dr. Dumont was also quite critical of the expensive programs in the States of New York and California to "treat drug abusers." He feared that they had wrongly adopted the same dated institutional models which have not proved successful in mental hospitals and prisons with our large buildings and poor records of returnees.

The medical profession is given high respect in our society as seen by the labels on most of the so-called patent drugs. The user is to "refer to their family physician" if help doesn't come in 2 to 5 days. The very definition of drug abuse is a *non-prescribed* drug, leaving the authority with the physician in terms of accurate prescription. This

is also shown with the "man in the white jacket" who sells us articles on every other TV commercial. At the same time, we know that the very professional respect which is used and misused here has been gained because of a tradition of *personal* and individual treatment which could never be sold over the counter. The "art and practice" of medicine by a caring person is threatened here. We know that also a certain specific drug can and does often have an opposite reaction with a child.

While the respect for the physician is appreciated, in the treatment process often there is a scapegoat of some persons' responsibility for their own actions. As an example, the parent is suddenly frightened when he sees his children and young adults responding in irresponsible ways to the lack of guidance and direction that they have been given. Physicians are handed the response of "You tell us. You tell them! You're the doctor!" It would seem that treatment at this point would often be slow and cautious in terms of the person's willingness to accept responsibility where he was or where he might respond to his problems at hand.

Some professionals would want to put this problem in the lap of the mental health center saying these young people and adults have "emotional" problems that need psychiatric help. While this is true of ten percent of the cases, a large majority of problems relate to various aspects of medical, social and cultural problems. Marijuana, for example, has been around for hundreds of years and only in the last 40 years the rising panic has developed. Many authorities feel this shouldn't be considered within the same perspectives as the other drugs. However, there are problems with marijuana, particularly during the first few hours of use, that cause severe concerns similar to alcohol abuse.

The important use of peer groups in both education and prevention of problems in drug abuse has often been avoided, because of adult confusion. Because the family unit has very little time together today, peer group pressure seems very important as to drug use and kinds and severity of drug use. Dr. Dumont mentioned earlier hopes to develop extensive programs of small community-based centers in Massachusetts where ex-abusers and mature youth can have a direct educational contact with other

\*Education Specialist, Child and Family Mental Health Services, Lewiston, Maine 04240.



youth. This is now being developed and will be a hopeful model for other states like Maine.

Where does Maine stand in drug abuse? Dr. Thaddeus Kostrubala, who came to Portland from Chicago, feels we are five years behind some of the pressures regarding abuse in the large cities. Yet, with the high mobility of people today and the mass media, it seems that in some ways we are catching up fast. From some brief surveys, it seems the trend toward younger children taking drugs is similar here as in the cities. While we are not extensively bothered by the so-called "hard" narcotics, there is use of many other "street" varieties of drugs as elsewhere. These combinations include, as an example: strychnine mixed with LSD to enhance certain effects.

It seems there are several things that doctors could do to make a direct contribution to preventing further drug abuse in Maine. Many small drug councils are forming without needed professional help. One of the main problems is a panic in trying to do something too quickly in a community. A solid understanding of the problem is needed. Doctors could greatly assist in the early formations of drug councils as communities plan educational programs with a balanced view for a realistic understanding. Secondly, it's important that there be an openness on the part of hospitals to have and to deal with de-toxification problems in drug abuse. In Lewiston, a local RAP Place where young people work, a 24-hour phone service provides help to young drug abusers. The hospital emergency rooms have called them on occasion to "sit it out" with a person having a bad experience. Thirdly, it is often helpful to take advantage of the previous adult drug abuse problem and the resources available to alcoholism. There are many effective Alcoholics Anonymous groups in Maine which have a group of people ready to help on call. This volunteer group, along with the State of Maine Alcoholism Counseling Centers, provide a resource that can be used more. AA members, talking to youth, can greatly assist youth in the misconceptions they had about the benefits of booze. Fourth, young people are often right when they say there is no regular community program for them in terms of recreation, gathering places, as previously the old corner drug store. It seems that churches too are all negligent here in meeting this need as they could provide helpful assistance to many Maine communities which are isolated. Our Puritan views of pleasure often do not consider the young person as having

basic social needs. Fifth, and quite directly, it seems that doctors could be much more helpful in *frequent checks on prescriptions given*. Medication here at the Mental Health Center is often avoided and strictly checked when it is prescribed. Followup is vital. It would seem that an appointment one week after a prescription would be in order, both for the physician's benefit as well as for the accuracy of knowing he was doing a good job, i.e., that the medication was working as prescribed. And last, it seems that the major work that needs to be done – if we are to avoid the epidemics of larger populated areas in our country – is to develop *now* Education and Prevention Programs in our schools and communities. The most effective programs in this area seem to be ones where adults work *with* youth, not simply *for* youth. In Lewiston, we are developing a model based on the Phoenix, Arizona program to include political leaders, lawyers, school administrators, physicians and mental health workers in a coordinated effort with youth to deal with this problem. Such cooperative concern seems to be the best, successful way to deal with a problem which cuts across many lines and many depths of personal and human problems.

Physicians are greatly needed in this effort in various roles, informative as well as clinical. The role of the physician in our society is a basic one. With this role of trust and support, physicians can offer much to the community outside of a specific practice. The crying needs of drug abuse need physicians involved with other community professionals to get the job done. Nurses too, in emergency rooms, have given much help as evidenced here in Lewiston. This seems to be an area where the concern of the physician as a caring person, as a citizen, can do much to change the tone and attitude of a severe problem in the minds of many people.

#### REFERENCES

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- Laurie, Peter, *DRUGS*, Penguin, Baltimore. A good British perspective.
- Nowlis, Helen H., *DRUGS ON THE COLLEGE CAMPUS*, Doubleday, Garden City, New York. Enlightened comparisons and references.
- Taylor, Norman, *NARCOTICS*, Dell, N.Y.C. Incorrect title, but a botanist who deals with the historical backgrounds of many types of drugs.



# AMERICAN CANCER SOCIETY-MAINE DIVISION, INC.

Brunswick, Maine

## American Cancer Society's 1970 Annual Report

NEW YORK, N.Y. — A turning point in the nation's attack on cancer is reflected in the American Cancer Society's 1970 Annual Report issued March 8, 1971.

"Throughout much of 1970, leaders of the ACS provided expert testimony before Congressional committees to bolster Federal research support that had been at a standstill and was threatened by cuts," the report states. Since then, proposals for the creation of a National Cancer Authority with funding to reach one-billion dollars by 1976 have been put before Congress and President Nixon has recommended an additional \$100-million budget appropriation for cancer research.

"The Seventies can be the decade of our biggest advance toward cancer control," H. Marvin Pollard, M.D., ACS President and William B. Lewis, Chairman of the Board, explained in an opening statement, "The exciting progress in virus research, leukemia, chemotherapy and in molecular biology opens enormous possibilities for attaining the knowledge we need for mastering the hundred or so diseases which are cancer."

The top ACS officials declare: "What the research attack against cancer has meant, along with the improvement of surgical and radiation treatment for cancer, is best expressed in the figure of 212,000 Americans who will be saved from cancer this year."

Lane W. Adams, ACS Executive Vice President, noted, "With 52-million Americans destined to get cancer, complacency can no longer be tolerated in this fight for the nation's health."

Dr. Pollard and Mr. Lewis announced a major ACS effort with "the launching of a concerted drive" to have every American woman receive a Pap test for uterine cancer by the mid 1970's. If this is accomplished, it could mean the elimination of practically all deaths from this form of cancer.

The main section of the report deals with research. It is entitled, "Great Expectations," to indicate hope for victory in the cancer fight along with the realization that the answer might be found where it is least expected. The report states, "polio was relatively simple to conquer compared with cancer, because polio was a single disease with a single cause. But cancer required a multiplicity of approaches."

The work of individual investigators funded by the ACS is featured in the special section and the

point is made that "Nearly every important gain of the 1960's in cancer research has been supported by the ACS somewhere along the line."

In a section of Professional Education, it is disclosed that the ACS awarded 223 clinical fellowships to give young physicians and dentists actual training in cancer work. The ACS has produced 31 films on cancer for the medical, dental and allied professions.

Research, education and service to the cancer patient represents the ACS approach to the cancer problem. The other half of education is public and in 1970 there were over 200,000 programs utilizing a personal approach in the teaching of means of cancer prevention and the importance of early diagnosis.

The tremendous ACS job of Public Education about the health hazards of smoking cigarettes was given a boost when cigarette commercials disappeared from broadcasting on January 2, 1971. The report states, "Clearly, public feeling about smoking — the very climate surrounding the issue — has changed." The ACS has gone on record with a plea to newspaper and magazine publishers for "fair space" to present its messages, as the tobacco industry turns to the print media for its advertising campaign.

Under the heading of "Service," the ACS reported more than 8,000 visits to hospitalized women following surgical breast removal by Reach to Recovery volunteers. Each volunteer, a carefully selected and trained woman who successfully adjusted to the same surgery, visited with permission of the patient's surgeon. The volunteers bring living proof of a return to a normal life; teach rehabilitative exercises and provide the patient with a temporary breast form. This is one example of ACS efforts in this area and its commitment to return cancer patients to normal lives after treatment.

In 1970, the ACS received a record vote of confidence from the American people — \$65,246,696 of which \$50,147,608 was realized through Crusade and \$15,099,087 through legacies. In 1970, per capita public support was 7.6 percent over the previous year.

Here's how ACS money was spent in the fiscal year ended August 31, 1970: Research, \$21,539,957; Public Education, \$10,782,171; Professional Education, \$6,702,229; Patient Services, \$7,946,514; Community Services, \$3,955,024; Management and General Services, \$6,174,683; Fund Raising, \$7,603,771.



# Maine Heart Association Notes

20 Winter Street, Augusta, Maine



## Highlights of Auscultation in Congenital Heart Disease — I

JOSEPH K. PERLOFF\*

The heart speaks in a language of its own; its vocabulary consists essentially of sounds and murmurs. Once the vocabulary is understood, considerable insight can be gained into the anatomic and physiologic condition of the heart and circulation.

*The Mitral Orifice* — The commonest cause of obstruction at the mitral orifice is rheumatic mitral stenosis. The auscultatory hallmarks of this disorder consist of a loud first heart sound, increased intensity of pulmonary valve closure, an opening snap; and a middiastolic murmur followed by presystolic accentuation. The skilled clinician not only understands the mechanisms of these signs but also understands how best to elicit them. A loud first heart sound and an opening snap imply good valve mobility and together are features of tight mitral stenosis. Accordingly, these auscultatory events would not be expected in the presence of immobilizing calcification of the leaflets or considerable mitral incompetence. Similarly, a loud pulmonary closure sound (best judged during inspiratory splitting of the second heart sound) reflects an elevated pressure in the pulmonary trunk. A presystolic murmur implies sinus rhythm and dominant mitral stenosis, so that this murmur vanishes with the advent of atrial fibrillation or appreciable mitral incompetence. In the presence of atrial fibrillation, the duration of the middiastolic murmur is an accurate mirror of the degree of stenosis; a middiastolic murmur that continues up to the end of diastole means that the gradient continues to the end of diastole, implying that stenosis is sufficient to prevent the left atrium from effectively emptying.

It is important to remember that the auscultatory signs of mitral stenosis are best heard over the *left ventricular impulse*. It is mandatory that the bell of the stethoscope be placed *precisely* over this impulse which is most readily located by palpating the region of the apex while the patient partially turns to the left. The physiologic effects of turning serve the additional useful purpose of transiently increasing the intensity of the murmur; coughing has a similar effect. Unless the proper positions and maneuvers

are employed, the auscultatory signs of mitral stenosis can be overlooked. *Silent* mitral stenosis is rare but may occur when severe pulmonary hypertension causes such enlargement of the right ventricle that it displaces the left ventricular impulse from the chest wall.

*Mitral incompetence* is accompanied by the prototype of the holosystolic murmur, i.e., a murmur that begins with the first heart sound and goes throughout systole up to the second heart sound. Such murmurs are generally maximal at the cardiac apex, although variations must be understood. The murmur of mitral incompetence is known to radiate to the axilla and back, but it occasionally radiates to the left sternal edge, base, and even into the neck where it may be mistaken for the murmur of aortic stenosis. The murmur of aortic stenosis itself — especially in older patients — may be well-heard if not best heard at the apex and incorrectly ascribed to mitral incompetence; this error can be avoided if it is remembered that the murmur of aortic stenosis — irrespective of its chest wall location — is *midsystolic* and ends before the second heart sound (see below).

There are two important deviations from the classic holosystolic murmur of mitral incompetence. A *late* systolic murmur preceded by one or more systolic clicks may accompany prolapse of a redundant posterior mitral leaflet. Although the degree of mitral incompetence is generally mild in such patients, it is important to recognize the significance of clicks and late systolic murmurs since the deranged mitral valve is susceptible to bacterial endocarditis. An *early* systolic or *decrecendo* systolic murmur is a feature of *severe* mitral incompetence of recent onset as with ruptured chordae tendinae; under these circumstances, the major part of regurgitation occurs in early systole since a very high left atrial pressure results in a striking increase in the resistance to left atrial filling in latter systole.

*The Tricuspid Valve* — The murmur of tricuspid stenosis is commonly missed even though this valvular defect occurs in 2-3 percent of patients with rheumatic mitral stenosis. Several guidelines set the stage for clinical recognition. The murmur is confined to a localized area along the lower left sternal edge, is presystolic with sinus rhythm and middiastolic with atrial fibrillation. The most distinctive feature is the selective inspiratory increase in loud-

\*Department of Medicine, Georgetown University School of Medicine, Division of Cardiology, Georgetown University Hospital, Washington, D.C.

Prepared by the Maine Heart Association for this Journal.



ness; during inspiration the tricuspid gradient increases and with it the intensity of the murmur.

When tricuspid *incompetence* occurs with an *elevated* right ventricular systolic pressure (pulmonary hypertension or congestive heart failure), there is a high velocity of regurgitant flow throughout systole and a relatively high frequency holosystolic murmur that selectively increases during inspiration (Carvallo's sign). Occasionally tricuspid incompetence occurs with *normal* right ventricular systolic pressure as with Ebstein's anomaly or following tricuspid endocarditis caused by "main line" administration of addictive drugs. Under these circumstances, a low velocity of regurgitant flow occurs chiefly in early systole so the murmur is relatively low frequency and early systolic but still selectively increases during inspiration.

*The Aortic Valve* — The aortic stenotic murmur is the model of the midsystolic murmur, crescendo-decrescendo in shape, beginning after the first heart sound or with an ejection sound, and ending before aortic valve closure. In valvular aortic stenosis, the murmur is maximal in the second right intercostal space with radiation upward, to the right, and into the neck. In older patients, especially those with calcific aortic stenosis, the murmur in the second right interspace may be harsh and grunting whereas the murmur at the apex pure and musical. It is important to remember that the classic midsystolic mur-

mur of aortic stenosis is sometimes absent altogether in patients with severe obstruction; left ventricular failure may result in a substantial decrease in flow across the stenotic valve with disappearance of the midsystolic murmur or replacement by the holosystolic murmur of mitral incompetence. In the presence of an increase in anteroposterior chest dimensions (emphysema), the basal murmur may soften or vanish although radiation into the neck persists.

The typical murmur of aortic *incompetence* is readily recognized especially when loud and accompanied by bounding arterial pulses. However, faint high frequency murmurs of mild aortic incompetence are difficult to hear and must be specifically sought by applying very firm pressure of the stethoscopic diaphragm to the mid-left sternal border while the patient sits or stands, leans forward, and holds the breath in full expiration. Squatting — by raising aortic root pressure — tends to augment these faint murmurs and serves a useful purpose in their detection which is important because of susceptibility to endocarditis. The direction of the blowing early diastolic murmur should be determined by comparing its loudness along the left and right sternal borders especially at the third intercostal spaces. Prominent radiation to the right sternal border suggests a non-rheumatic etiology such as aortic root disease or specific cusp deformity.

(Part II will appear in the May 1971 issue)

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#### AMERICAN CANCER SOCIETY'S 1970 ANNUAL REPORT

*Continued from Page 85*

In its Combined Budget for 1970-71, the ACS allots 34.1 percent of its funds to Research; 17.1 percent to Public Education; 10.4 percent to Professional Education; 12 percent to Patient Services and 6 percent to Community Services; 11.1 percent to Fund Raising and 9.3 percent for Management and General Services.

In a special new section, the ACS Annual Report presented a "Performance Profile" to spotlight how some ACS funds were used in 1970. "For example, 15,585,144 people were reached via 208,079 ACS

Public Education Programs. At the same time, 772,132 doctors, dentists, nurses and other healing arts professionals were reached through 26,954 ACS Professional Education programs."

In the 1970 report, a single independent accounting firm certifies the combined financial statements of the 58 Chartered Divisions and National Headquarters. The Society is the first voluntary health agency, national in scope and reporting in accordance with National Health Council Standards, to accomplish this objective.



# RESPIRATORY DISEASE NOTES

Maine Thoracic Society

Medical Section - Maine TB and Health Association

*Respiratory Disease Notes, jointly sponsored by the Maine Thoracic Society and the Medical Section of the Maine TB and Health Association, will be a regular feature of The Journal. The able physicians of these organizations will abstract the literature in this field for our Journal. Each month, pertinent articles of value and interest will be presented in short form. Your interest is solicited and your comments will be appreciated.—Ed.*

## **Preoperative X-Ray Therapy as an Adjuvant in the Treatment of Bronchogenic Carcinoma**

The routine use of preoperative roentgen therapy as an adjunct to the surgical treatment of lung cancer has been suggested in an attempt to improve survival rate.

Observations have indicated that certain non-resectable tumors became resectable with its use preoperatively, and tumor cells were rendered non-viable.

A randomized study was conducted by the Veterans Administration Surgical Cancer Chemotherapy Group. Three hundred and thirty-nine patients were admitted to the study and 170 patients entered the preoperative therapy group and 169 entered into the operation only group (control). Radiation therapy treated the primary lesion and the mediastinum to an average dose between 4000 to 5000 R. After 4 weeks, all the x-ray patients were reevaluated for thoracotomy and all operative procedures were left to the discretion of the surgeons. All patients had proven bronchogenic carcinoma.

The two patient groups were similar in nearly all regards, and all who entered the study were considered suitable for thoracotomy. Postoperative complications were not significantly different.

The data collected from this randomized study with patients with proven lung cancer, who were believed to have clinically resectable tumors, failed to show any improvement in the salvage rate in the preoperative x-ray treatment group over that obtained in the group treated by operation only. In fact, there was actually an adverse effect in the x-ray treatment group who underwent subsequent removal of tumor. These are predictable, deleterious effects on the heart and pulmonary function, secondary to deep x-ray therapy. As a result of this study, the authors conclude that the routine use of preoperative x-ray therapy in lung cancer is contraindicated.

# County Society Notes

## ANDROSCOGGIN

The meeting of the Androscoggin County Medical Association was held at Steckino's Restaurant in Lewiston, Maine on January 27, 1971, preceded by dinner. The business meeting was opened at 8:30 p.m. by the President, Dr. Charles W. Steele, with twenty-three members present.

Dr. Charles R. Glassmire, President of the Maine Medical Association, was introduced. He spoke of bureaucracy problems encountered in medicine today and steps being taken to try and solve these problems (13 priority problems), e.g., Foundation concept, peer review, etc. Dr. Glassmire urged the support of the delegates and representatives sent to State Society. There was a question and answer period.

Dr. Charles W. Eastman, Councilor for the Second District, spoke briefly.

The minutes of the December meeting were approved as read.

Dr. Richard M. Swengel presented the medico-legal plan for medical malpractice cases. It was moved and voted to accept the Joint Medical Plan for Medical Malpractice cases.

The Secretary will notify the Bar Association of the decision and supply the names of physicians appointed to the panel by the President.

Dr. Edward L. Reeves made the motion that there be nine (9) Councilor Districts, with councilors elected locally. Delegates are to be so instructed.

Meeting adjourned at 10:10 p.m.

DONALD L. ANDERSON, M.D., *Secretary*

## WASHINGTON

The regular meeting of the Washington County Medical Society was held on February 1, 1971 at the Medical Staff Lounge, Down East Community Hospital in Machias, Maine, with nine members present.

The meeting was called to order by the President, Dr. G. Bernard Shaw. The minutes of the last meeting were read and approved.

Dr. Donald M. Robertson, delegate to the M.M.A., reported on the special meeting of the House of Delegates held at Waterville, Maine on December 13, 1970.

1. The State Medical Association may set up a Foundation Plan to cover the entire State.

2. Recommended no action be taken about Sterilization. To retain present law.

3. On abortions, recommended the present law be altered to allow referrals of cases out of State and that the present law should have changes on the reasons for abortion, recommended by the committee.

4. The Society recommended that they would go along with any law requiring safety glazing of all entrance doors.

5. Recommended limiting scope of Chiropractic practice in Maine.

6. A speaker from Delaware spoke on Peer Review as it applied to Delaware, covering not only the hospitals, but office practice.

7. Delegates voted to favor a plan for Peer Review for the State of Maine.

Discussion of reorganization of Maine Medical Association, particularly as to the appointment of Councilors and their elections.

1. Dr. Robert G. MacBride of Lubec, Maine read the Minority Report and a motion by Dr. James C. Bates, Councilor of the Fifth District, that this plan be referred back to the committee. Lost by one vote.

2. There was considerable discussion by the members of the Society in regard to the proposed reorganization and it was the

## COUNTY SOCIETY OFFICERS

### ANDROSCOGGIN

President, Charles W. Steele, M.D., Lewiston  
Secretary, Donald L. Anderson, M.D., Lewiston

### AROOSTOOK

President, I. Mead Hayward, M.D., Caribou  
Secretary, George J. Harrison, M.D., Houlton

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Secretary, Francis A. Spellman, M.D., Togus

### KNOX

President, Henry O. White, M.D., Rockland  
Secretary, William E. Nuesse, M.D., Rockland

### LINCOLN-SAGADAHOC

President, Frank O. Avantaggio, Jr., M.D., Damariscotta  
Secretary, George W. Bostwick, M.D., Newcastle

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### WASHINGTON

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Secretary, Karl V. Larson, M.D., East Machias

### YORK

President, Harry B. Eisberg, M.D., Biddeford  
Secretary, Charles W. Kinghorn, M.D., Kittery  
Asst. Secretary, Melvin Bacon, M.D., Sanford



consensus of the members that the various delegates to the M.M.A. be better informed as to the Minority Report presented by Dr. MacBride and that proper steps be taken to insure their knowledge of this report.

3. Members voted a special assessment of \$10.00 per member to cover cost of informing delegates.

Dr. Robertson has made a memorandum concerning the Reorganization and Minority Report and Dr. MacBride has presented a resolution.

It was moved by Dr. Nelson W. Stott of Eastport, Maine, and seconded by Dr. James C. Bates of Eastport, Maine, that the Memorandum of Dr. Robertson and the Minority Report of Dr. MacBride, also the Resolution, be accepted. It was so moved.

Dr. Robertson reported on the Maternal and Infant Care Program and mentioned the necessity for discussion of the reports, at a Joint meeting of the Washington and Hancock County Societies.

KARL V. LARSON, M.D., *Secretary*

#### KNOX

The regular meeting of the Knox County Medical Society was held on January 5, 1971 at the Sail Loft in Rockport, Maine, with nineteen members attending.

Dr. Mustafa V. Onat reported on the Maine Medical Association House of Delegates meeting held on December 13, 1970 at Waterville which he attended with Dr. Onni C. Kangas. The subject discussed at this meeting was peer review and that each specialty should review its own members.

Dr. Emery B. Howard, Jr. was selected to serve as a representative of this Society to serve on the Drug Abuse Council. Dr. Peter Giustra was approved for full membership in the Knox County Medical Society.

The establishment of a medical library was discussed and it was recommended that the members of the Library Committee approach both administrators and hospital boards of the two hospitals concerned. Dr. Robert H. Eddy representing the Knox County General Hospital Library Board, and Dr. William E. Nuesse, representing the Camden Community Hospital Library Board, will follow up on this recommendation and report at a later meeting.

The necessity of making a decision on the Ambulatory Care Program for the PenBay Medical Center was brought to the attention of the members by Dr. Henry O. White. Several possibilities were discussed with the recommendation that the Knox County Medical Society agrees to arrange provision of medical services for the Ambulatory Care Center of the Penobscot Bay Medical Center under the proposed O.E.O. program.

A committee concerning physician procurement was appointed by Dr. White with Dr. Wesley N. Wasgatt as senior chairman along with Dr. Charles N. Clarke and includes all physicians involved with primary care (internists, general practitioners, and pediatricians). Dr. White then appointed a committee which will investigate the four types of delivery care possible for the Ambulatory Care Center. The members of this committee are Drs. White, Johan Brouwer, Alan F. Woodruff and Nuesse.

The Knox County Medical Society met on February 2, 1971 at the Sail Loft in Rockport, Maine.

*Communications:* Dr. Paul A. Fichtner of Bath will be at our March meeting to discuss the recent Delegates' Meeting of the Maine Medical Association.

*Old Business:* The library situation was discussed. Knox

County General Hospital has shown interest in developing a core library and the business of acquiring a grant will be investigated by Dr. Robert H. Eddy. Dr. Niles L. Perkins showed interest in assisting with correspondence regarding the grant. The PenBay Board agreed that a core library was essential for the new hospital.

Dr. White mentioned the necessity of having an organization for the delivery of health care. He spoke about his recent trip with Dr. Nuesse to the Marshfield Clinic in Marshfield, Wisconsin to examine their method of delivering health care. A further report will be presented at the March meeting.

Dr. Perkins mentioned that a progress report from the PenBay Medical Center was sent to O.E.O. on the first of February. He also stated that the PenBay Medical Center has applied for a grant to aid in the organization of the Medical Center. This will include fees for lawyers.

*New Business:* Dr. White mentioned that a computer demonstration will be presented at Camden Community Hospital at 8:00 a.m. on February 6, 1971.

The speaker for the evening, Dr. Donald F. Marshall of Portland, was presented and he discussed the facilities for dialysis at the Maine Medical Center. He gave an excellent history of how this center came into being and urged that all physicians be aware of the presence of this dialysis center and if they have any patients who need dialysis because of chronic kidney disease, the Medical Center should be contacted. He showed some slides of the center and had a question and answer period.

The meeting adjourned following Dr. Marshall's presentation.

WILLIAM E. NUESSE, M.D., *Secretary*

#### LINCOLN-SAGADAHOC

A regular meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on February 16, 1971.

The President, Dr. Frank O. Avantaggio, Jr. called the meeting to order at 8:45 p.m. The minutes of the previous meeting were read by the Secretary and accepted unanimously as read.

There was no old business.

Dr. Paul A. Fichtner called the attention of this Society to an editorial from the AMA News citing the method by which the Social Security Administration sets the ceiling for reimbursable medical fees. He expressed indignation at this method and moved that this Society express its disapproval of this method and communicate its disapproval to the Council of the M.M.A. and to the Social Security Administration. The motion was passed unanimously.

Dr. Avantaggio then presented Dr. Henry A. Hudson, who introduced Dr. Lawrence M. Leonard of Portland, who spoke on weight-bearing problems in knees.

GEORGE W. BOSTWICK, M.D., *Secretary*

#### HANCOCK

The 431st meeting of the Hancock County Medical Society was held at Jasper's Restaurant in Ellsworth, Maine on February 10, 1971, with fifteen members and four guests present.

A presentation on anemias was given by Dr. Alan W. Boone, an internist of Bangor, Maine. This succinct address was followed by a brief discussion period and a short business meeting.

BRADLEY E. BROWNLOW, M.D., *Secretary*

## Letters to the Editor

To the Editor:

In Dr. Korn's review of cardiomyopathies in the January issue, he mentioned in regard to treatment that if obstruction to left ventricular outflow was present, it should be relieved. Surgical relief is implied. Surgical removal of portions of the inter-ventricular septum will relieve the outflow tract obstruction when present in hypertrophic cardiomyopathy and may be associated with symptomatic improvement.<sup>1</sup> However, the improvement which follows this type of surgical approach may be a non-specific result of myocardial injury with subsequent decreased contractility, rather than removal of the outflow tract obstruction. At least one patient with hypertrophic cardiomyopathy experienced marked relief of her symptoms after a myocardial infarction.<sup>2</sup> There is likewise some evidence that obstruction of the outflow tract of the left ventricle is not the cause of the hypertrophy but is merely a product of it.<sup>3</sup>

Good results have been obtained using beta adrenergic blockade for the symptomatic treatment of hypertrophic cardiomyopathy.<sup>4-6</sup> Recent studies suggest that this blockade with a cardio-selective agent (practolol) may allow the same amount of cardiac work at a lower left ventricular end diastolic pressure.<sup>7</sup> Based on studies such as these, many now recommend beta adrenergic blockade rather than surgery as the first therapeutic approach in patients with hypertrophic cardiomyopathy. Unfortunately, cardiomyopathies other than the hypertrophic type are not so amenable to therapy.

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JOE R. WISE, JR., M.D.  
Eastern Maine Medical Center  
Bangor, Maine 04401

To the Editor:

It has been brought to our attention that many telephoned orders to drug stores are not followed up with a signed prescription. We realize that you are busy, *but* in order for the pharmacist to receive payment for this prescription, he *must* have your signed prescription. This is a necessary control to the Medicaid program.

It would be helpful if you could put the word "maintenance" on all prescriptions for medication that you wish to continue for six months, with a minimum supply for 30 days to a maximum, supply of 90-days.

Your cooperation is earnestly requested.

GILBERT E. MARCOTTE, M.D.  
Director, Bureau of Medical Care  
Department of Health and Welfare  
State House  
Augusta, Maine 04330

## Announcement

### Doubly Honored!

George W. Lowenstein, M.D., of Clearwater, Fla. (and formerly a summer resident of Chebeague Island, Maine), was doubly honored recently. President Richard M. Nixon presented to him his "Award of Commendation" — "in Recognition of Exceptional Service to Others in the Finest American Tradition." He also recently received from the American National Red Cross a Service Pin for 50 Years of Volunteer Service.

Dr. Lowenstein is an Honorary Member of the Knox County Medical Society and the Maine Medical Association.

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# The Journal of the Maine Medical Association

Volume Sixty-two

Brunswick, Maine, May 1971

Number 5

## Septicemia Revisited, 1965-1966

WILLIAM J. HALL, III, M.D.\*

### INTRODUCTION

Human blood stream invasion by microorganisms represents a potentially lethal metabolic insult, protean enough in its early manifestations to mimic mild respiratory illness or cardiogenic shock, and often enough misdiagnosed and untreated with catastrophic consequences.

The introduction of successive generations of antimicrobial and chemotherapeutic agents, while enhancing the physician's ability to treat septicemia (probably by successively smaller increments), has changed the identities and metabolic characters of likely microbial invaders<sup>1,2</sup> while advances in oncology, the use of electro-mechanical devices to correct or sustain ventilatory and cardiac functions and the prolonged survival of patients with far-advanced renal and pulmonary diseases have altered the host population at risk.

Thus, continuing reassessment of host factors and of the microbial milieu du jour remain essential to expert care of the septicemic patient.

Patients at University Hospital, Boston, Massachusetts, who have experienced septicemia constitute a group of special interest. Those in whom septicemia occurred during the 24 months from January 1, 1965 to December 31, 1966 comprise the present review.

### PATIENT MATERIAL

University Hospital is a 230-bed adult general hospital which serves also as a referral center for patients from other New England states.

The charts of all patients with positive blood cultures between January 1, 1965 and December 31, 1966 were examined in detail and pertinent information tabulated. Most charts were subsequently re-examined for accuracy of extracted data and validity of data interpretation.

Patients suspected of having septicemia or with fever of obscure origin usually had multiple blood cultures obtained during periods of chills or fever. At least 10 cc

of venous blood was obtained (usually from an ante-cubital vein) after preparation of the overlying skin with 70% ethanol and tincture of iodine, and immediately inoculated into 150 cc of dextrose-phosphate broth and into 15 cc of fresh thioglycolate broth. All cultures were incubated at 37° C. for at least 14 days, some for longer periods of time. Specimens were Gram stained and subcultured upon any evidence of growth in the dextrose-phosphate or thioglycolate broths and identification of microorganisms made by the methods in routine use in the Bacteriology Laboratory at University Hospital. Antimicrobial sensitivity testing was accomplished with the use of drug-impregnated discs or, in some instances, by the serial two-fold tube dilution method.

ABO blood grouping was performed by the Hematology Laboratory according to standard procedures. The observed distribution of blood groups among hospitalized Caucasians in Boston was determined from data kindly supplied by Doctor George P. Lewis of the Lemuel Shattuck Hospital, Boston, Massachusetts.

### STATISTICAL ANALYSES

Statistical analyses were performed using the chi-square test, with Yates' correction for continuity employed when indicated.

### DEFINITIONS OF EVENTS

Septicemia was deemed to have occurred upon the recovery of a microorganism from a specimen of blood cultured as previously described. The date of septicemia was the date on which the positive blood culture was obtained from the patient, irrespective of preceding infection. A single isolation of "diphtheroides," alpha-hemolytic streptococci or coagulase-negative staphylococci was always excluded from tabulation; whereas, isolation of one of these organisms from two or more specimens of blood obtained on the same day was arbitrarily considered to represent blood stream invasion and was tabulated. Mixed septicemia occurred when two or more dif-

\*Formerly Fellow in Medicine, Boston University School of Medicine and University Hospital, Boston, Massachusetts.

FIGURE 1

AGE AND SEX DISTRIBUTION AMONG PATIENTS ADMITTED TO  
UNIVERSITY HOSPITAL, BOSTON, MASSACHUSETTS, 1965 AND 1966

	UNDER 50 YEARS(%)	50-70 YEARS(%)	OVER 70 YEARS(%)	TOTAL (NOS.)
MALE	54	28	18	4936
FEMALE	74	21	5	8117

ferent microorganisms (other than "diphtheroides," alpha-hemolytic streptococci or coagulase-negative staphylococci) were recovered from a single blood culture or when two or more different organisms (without exception) were each cultured from two or more blood specimens obtained on the same day.

The site of microorganism entry was ascertained as accurately as possible from information available in the patient's record.

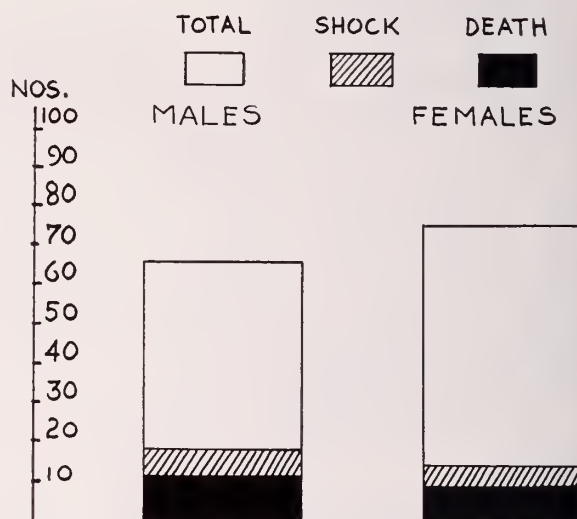
The presence of pre- or co-existing illness or therapy likely to influence the incidence and course of septicemia was also determined after careful examination of patients' charts. Designation of illnesses as nonfatal, ultimately fatal (expected to be the immediate cause of death within five years) or rapidly fatal (death as a direct consequence expected within twelve months) was based on a synthesis of several factors: the nature of the underlying illness, its stage of evolution at the time of septicemia, age of patient, the presence of other co-existing illnesses and the nature of therapeutic measures in progress at the time of septicemia. In the final synthesis, however, estimation of the gravity of pre-existing illnesses and therapeutic measures, and their influence on each septicemic episode constituted a retrospective clinical judgement.

Effective antimicrobial therapy constituted the intravenous or intramuscular administration of an antimicrobial agent to which the microorganism was known to be sensitive in vitro and which was known to regularly produce high levels of serum antimicrobial activity. Rarely, the oral administration of such an agent was considered effective therapy.

Corticosteroid therapy of septicemic shock was defined as the intravenous administration of the equivalent of 300 milligrams or more of cortisone acetate at the time of shock in addition to any corticosteroid therapy already in progress.

Septicemic shock was designated when the absolute systolic blood pressure measured 80 mm Hg or less on two

FIGURE 2



DISTRIBUTION OF TOTAL SEPTICEMIC EPISODES,  
SEPTICEMIC SHOCK AND DEATH AMONG  
MALES AND FEMALES.

or more consecutive measurements at the time of septicemia or when the same measurements documented a decrease in systolic pressure of at least 40 mm Hg when compared with the mean systolic pressure recorded during 24 hours preceding, or following recovery from, septicemia or when the attending physician described the occurrence of tachycardia, profuse perspiration, confusion, pallor or oliguria in association with a single hypotensive measurement.

Septicemic death was presumed when death occurred within 48 hours of blood stream invasion and could not

**FIGURE 3**  
**DISTRIBUTION OF SEPTICEMIC EPISODES AND COMPLICATIONS**  
**THEREOF, ACCORDING TO PATIENT AGE AND SEX**

		UNDER 50 YRS.. 50 - 70 YRS....OVER 70 YRS. TOTAL			
MALE	NO. OF EPISODES	19	28	18	65
	SHOCK	2	9	7	18
	DEATH	1	5	5	11
FEMALE	NO. OF EPISODES	35	23	16	74
	SHOCK	4	6	3	13
	DEATH	1	4	3	8

TABLE 1

INCIDENCE OF SEPTICEMIA AND SEPTICEMIC DEATH,  
 UNIVERSITY HOSPITAL, 1965 AND 1966  
 (PER 1000 GENERAL HOSPITAL ADMISSIONS)

	Male	Female
All Septicemias	13.1*	9.1*
Death	2.2	0.9
Gram Negative Septicemia	6.4	5.4
Death	1.4	0.7
Staphylococcal** Septicemia	2.2	1.3
Death	0.4	0.1

\*  $p < 0.05$ 

\*\* Coagulase positive and negative

be attributed to another cause. (Deaths in septicemic patients after 48 hours were attributed to continuing infection but not to septicemia per se.)

Metastatic infection was considered present when a microorganism identical to that recovered from blood was cultured from a clinical or autopsy tissue specimen at an inflammatory site judged not to be the site of entry into the blood stream. (In most instances, however, autopsy cultures were not considered for tabulation.)

"Hospital" strains of staphylococci were so designated when their site of entry was a surgical wound or when septicemia occurred from another site after 14 days of continuous hospitalization.

## RESULTS

During 1965 and 1966, comprising the 24 months under study, 4,936 men and 8,117 women were admitted to University Hospital, Boston, Massachusetts. The distribution of general hospital admissions is shown in Figure 1. The larger group under 50 years of age in females, reflects in part the influence of obstetrical admissions which accounted for approximately 25% of female

admissions during 1965 and 1966. No records of race among general hospital admissions were kept.

One hundred and thirty-nine episodes of septicemia occurred among 128 patients. Six patients each experienced two or more episodes. Sixty-five episodes occurred in males and 74 episodes in females. As shown in Table 1, a significant difference in the incidence of septicemia in men and in women was present during the 24 months under study, while Figure 2 demonstrates the noticeable sparing of females from septicemic complications. While less than half of all general hospital admissions were 50 years of age or older, 60% of all septicemic episodes occurred in this older age group as did approximately 80% of episodes of septicemic shock and fully 90% of septicemic deaths (Figure 3).

The distribution of offending microorganisms among the 139 septicemic episodes is shown in Table 2. It can be seen that while coagulase-positive staphylococci were responsible for 16% of all episodes, Gram negative bacilli accounted for more than one half (53.2%) of the total. Fungal blood stream invasion caused seven episodes of sepsis.

Prosthetic devices or foreign bodies were deemed to have played a significant role in blood stream invasion in 28 episodes (Table 3).

## GRAM NEGATIVE BACILLUS SEPTICEMIA

Seventy-six episodes of Gram negative septicemia occurred during the period under investigation. Twenty-one episodes (27.6%) resulted in shock and 13 (17.1%) ended in death. Shock and death occurred about as frequently in episodes caused by members of the family Enterobacteriaceae (26.1% and 15.2%, respectively) as in the group of Gram negative bacteremias as a whole. Shock and death occurred with a higher frequency (42.8% and



TABLE 2

DISTRIBUTION OF INVADING MICROORGANISMS AMONG 139 SEPTICEMIC EPISODES, 1965 AND 1966		
	No.	%
Staphylococcus Pyogenes (coagulase positive)	22	15.8
Staphylococcus Epidermidis (coagulase negative)	4	2.8
Diplococcus Pneumoniae	6	4.3
Streptococcus Pyogenes (Lancefield Group A)	4	2.8
Streptococcus Fecalis (Lancefield Group D)	5	3.7
Streptococcus Sp., alpha hemolytic (Not Group A or D)	3	2.2
Corynebacterium Sp. (Not Diphtheriae)	1	0.7
Clostridium Perfringens	1	0.7
Neisseria Pharyngitidis	1	0.7
Escherichia Coli	26	18.7
Aerobacter Aerogenes	13	9.3
Proteus Mirabilis	5	3.7
Hafnia Sp.	1	0.7
Serratia Sp.	1	0.7
Pseudomonas Aeruginosa	7	5.0
Achromobacter and Herellea	3	2.2
Flavobacterium Sp.	2	1.4
Alkaligenes Fecalis	1	0.7
Fusiformis Sp.	6	4.3
Hemophilus Sp.	1	0.7
Unidentified Gram Negative Bacilli	6	4.3
Mixed Gram Negative Bacilli	4	2.8
Mixed Gram Positive and Gram Negative Bacteria	9	6.4
Candida Sp.	6	4.3
Aspergillus Sp.	1	0.7
Total	139	100

28.5%, respectively) among bacteremic episodes caused by *Pseudomonas Aeruginosa* while neither shock nor death occurred among the *Fusiform* (*Bacteroides*) group of bacteremias. In both of these groups, the numbers of episodes were too few for meaningful statistical interpretation. Blood stream invasion by multiple Gram negative organisms also demonstrated a high incidence of shock (75%) but again the number of episodes was too small for meaningful analysis. Table 4 shows the distribution of shock and death among the Gram negative bacillus isolates from blood.

One of 76 episodes (1.3%) resulted in metastatic infection (of the aortic valve) while two episodes were complicated by intravascular coagulation. Only three of 21 episodes of bacteremic shock were treated with adrenal corticosteroids, one of which ended with the death of the patient. Twelve of 21 patients who experienced shock died.

As might be expected, almost 80% of Gram negative bacteremias originated from the kidney, bowel, hepatobiliary system or genital tract. Indeed, the kidney alone provided the origin for blood stream invasion in 46% of the episodes. Only two of 76 episodes (2.6%) originated from intravenous catheters or cannulae, neither of which was complicated by shock or death. Five of 76 episodes were judged from available evidence to have originated in the tracheo-bronchial tree. Of the five episodes, none was known to have complicated a primary Gram negative bacillus pneumonia, while three episodes occurred in patients with impaired host defenses against infection.

TABLE 3

PROSTHETIC DEVICES IMPLICATED OR INCRIMINATED AS ENTRY SITES IN 139 EPISODES OF SEPTICEMIA	
Intravenous Catheters	10
Arterio-Venous Cannula	1
Vascular Prosthesis	1
Renal Pelvis or Bladder Catheters	14
Orthopedic Prosthesis	1
Tracheostomy Tube	1
Total	28

TABLE 4

DISTRIBUTION OF GRAM NEGATIVE BACTEREMIA EPISODES, BACTEREMIC SHOCK AND BACTEREMIC DEATH AMONG GRAM NEGATIVE BACILLUS ISOLATES, 1965 AND 1966						
	<i>Episodes</i>		<i>Shock</i>		<i>Deaths</i>	
	No.	%	No.	%	No.	%
E. Coli	26	34.2	7	33.3	6	46.1
A. Aerogenes	13	17.1	4	19.0	2	15.3
Proteus Mirabilis	5	6.5	1	4.7	0	...
Hafnia	1	1.3	0	...	0	...
Serratia	1	1.3	0	...	0	...
Pseudomonas A.	7	9.2	3	14.2	2	15.3
Fusiform Sp.	6	7.9	0	...	0	...
Herellea	2	2.6	0	...	0	...
Achromobacter	1	1.3	0	...	0	...
Flavobacterium	2	2.6	0	...	0	...
Alkaligenes F.	1	1.3	0	...	0	...
Hemophilus Sp.	1	1.3	1	4.7	0	...
Multiple Gram Negative	4	5.2	3	14.2	1	7.7
Unidentified Gram						
Negative	6	7.9	2	9.5	2	15.3
Total	76	100	21	100	13	100

(Two patients had malignant tumors and recent or continuing chemotherapy while one patient had a tracheostomy.)

Figure 4 illustrates the crude incidence of death among 76 Gram negative bacteremic episodes in relation to four host factors. The severity of any pre-existing illness appeared to have little effect on the likelihood of survival while age adversely affected the outcome of septicemia.

Sixty-six episodes of Gram negative septicemia occurred in Caucasians; 28 episodes in males and 38 episodes in females. This group of patients was subjected to further analysis in an attempt to define patient factors affecting the occurrence and outcome of septicemia.

Advanced age appeared to play a major role in predisposing individuals to the occurrence of blood stream invasion. Among 28 episodes in Caucasian males, 22 (78.6%) occurred in patients 50 years of age or older while among 38 episodes in females, 25 (65.8%) were included in this age group. While episodes in Caucasian males 50 years of age or older were not associated with more than expected numbers of "ultimately —" and "rapidly fatal" illnesses, the corresponding group of females did have a higher incidence of these illnesses (though the increment was not statistically significant).

Gram negative bacteremic shock complicated blood stream invasion in 11 of 28 males episodes and in 8 of 38 female episodes. All 11 episodes of shock in males

## FIGURE 4

CRUDE INCIDENCE OF GRAM NEGATIVE BACTEREMIA  
AND BACTEREMIC DEATH IN RELATION TO HOST FACTORS

	NON-FATAL DIAG- NOSIS	ULTIMATE OR RAPIDLY FATAL DIAG- NOSIS	EFFECTIVE ANTI- MICROBIAL THERAPY	NO EFFECTIVE ANTI- MICROBIAL THERAPY	LESS THAN 50 YRS. OLD	MORE THAN 49 YRS. OLD	FEMALES	MALES
NO. EPI- SODES	34	42	25	51	27	49	44	32
NO. DEAD	5 (14.7%)	8 (19.0%)	2 (8.0%)	11 (21.5%)	0 (0%)	13 (26.5%)	6 (13.6%)	7 (21.8%)

occurred in patients over 49 years of age, while 7 of the episodes of shock in females were included in this older age group. Men and women 50 years of age or older who experienced shock did not have larger-than-expected numbers of "ultimately —" and "rapidly fatal" underlying illnesses nor was lack of effective antimicrobial therapy more frequent than predicted for this age group.

Like Gram negative shock, death attributable directly to Gram negative bacteremia appeared to increase disproportionately with age. All male bacteremic deaths occurred in the age group 50 years of age or older as did all six female deaths. This group of bacteremic Caucasians over 49 years of age did not contain inordinate numbers of "ultimately —" and "rapidly fatal" illnesses nor did these older patients suffer more than predicted from lack of effective therapy.

The significance of patient blood group as a factor in the occurrence and outcome of blood stream invasion by Gram negative bacilli was assessed in 46 Caucasian episodes for which blood groups were available.

Among these episodes, blood group A occurred 13 times, blood group O 28 times, and blood group B 5 times. No bacteremic patient was known to have had blood group AB. When bacteremic episodes were analysed for the effect of blood group substance upon the incidence of septicemia, no statistically significant alteration of blood group distribution from that predicted could be discerned.

However, among 13 episodes of Gram negative sepsis complicated by shock, blood group O occurred 11 times ( $p < 0.05$ ) while all 7 bacteremic deaths occurred in patients with group O red blood cells ( $p < 0.05$ ). The incidences of "ultimately —" and "rapidly fatal" illness and of patients 50 years of age or older were not significantly greater in blood group O bacteremics when compared with the entire group of bacteremic Caucasians and while greater numbers of episodes in patients with blood group O failed to receive effective antimicrobial

TABLE 5

ANTIMICROBIAL SENSITIVITIES OF SELECTED  
GRAM NEGATIVE BACILLI, 1965 AND 1966

	Tetra- cycline		Kana- mycin		Chloram- phenicol		Colistin	
	No.*	%	No.	%	No.	%	No.	%
E. Coli	8/23	35	20/24	83	18/22	82	22/24	91
A. Aerogenes	0/12	0	8/11	73	4/12	33	12/12	100
Fusiform	4/5	80	0/5	0	4/5	80	0/5	0
Pseudomonas A.	0/6	0	0/6	0	0/6	0	6/6	100
Proteus Mirabilis	0/5	0	3/5	60	2/5	40	0/5	0

\*No. Sensitive/No. Tested.

therapy, this increment was not statistically significant. No patient with blood group O experienced more than one episode of shock.

When compared with the entire group of Gram negative septicemic episodes in Caucasians, the incidence of blood groups A, B and O among episodes of blood stream invasion caused by members of the family Enterobacteriaceae did not differ significantly from that predicted.

Seventeen of 25 episodes of blood stream invasion by E. Coli in Caucasians occurred in females and eight in males (70% and 44%, respectively, of each group originated in the urinary tract) while of 11 episodes of Aerobacter Aerogenes bacteremia only four occurred in females. (Of these four episodes, two had the kidney or its collecting system as a portal of entry. Four of the seven male episodes so originated.)

Antimicrobial sensitivities for the four largest groups of Gram negative bacilli recovered from blood are shown in Table 5. None of the five Fusiform (Bacteroides) species was sensitive to penicillin-G when tested with the ten unit paper disc.

## STAPHYLOCOCCAL SEPTICEMIA

Blood stream invasion by staphylococcus species occurred 26 times (Tables 1 and 2). The relationships be-

### FIGURE 5

#### CRUDE INCIDENCE OF STAPHYLOCOCCAL BACTEREMIA AND BACTEREMIC DEATH IN RELATION TO MICROORGANISM FACTORS

	COAGULASE POSITIVE	COAGULASE NEGATIVE	PENICILLIN SENSITIVE	PENICILLIN RESISTANT	HOSPITAL ACQUIRED	NON- HOSPITAL ACQUIRED
NO. EPISODES	22	4	4	18	15	11
NO. DEAD	3 (13.6%)	0 (0%)	1 (25%)	1 (5.5%)	3 (20%)	0 (0%)

tween blood stream invasion and microorganism characteristics are shown in Figure 5.

Twenty-two episodes were caused by coagulase-producing *Staphylococcus Aureus*. Thirteen episodes of this group were caused by organisms deemed to have been acquired by the patient from the hospital environment; three of these infections ended in death. No patient died whose bacteremia was caused by a non-"hospital" strain of staphylococcus. Only one of the 13 strains of "hospital" staphylococci was sensitive to penicillin-G while three of nine strains acquired by patients while outside of the hospital were sensitive to penicillin.

One of three staphylococcal bacteremic deaths occurred after blood stream invasion by a penicillin-sensitive organism while a second death was attributed to blood stream invasion by a penicillin-resistant strain. (One isolate was lost and not subjected to antimicrobial sensitivity testing.)

Table 6 shows the portals of entry incriminated in 26 episodes of staphylococcal bacteremia.

Among 22 episodes of bacteremia caused by coagulase positive staphylococci, five (22.7%) originated at the site of an indwelling venous catheter; none of the five episodes ended in death. Four of 22 episodes (18.2%) were complicated by metastatic infection, one of which ended in bacteremic death (Table 7). As shown in Figure 6, blood stream invasion by coagulase positive *Staphylococcus Aureus* occurred with equal frequency in men and in women. Eight episodes were given an effective course of antimicrobial therapy; none ended in death. Bacteremic death occurred three times among 14 episodes in which effective therapy was not employed. Among ten episodes in patients with "non-fatal" pre-existing illnesses, two ended in septicemic death. Only one of twelve episodes in patients with "ultimately —" and "rapidly fatal" illnesses resulted in death.

Fourteen of 22 episodes occurred in patients 50 years

TABLE 6

PORTALS OF ENTRY IN TWENTY-SIX EPISODES OF STAPHYLOCOCCAL BACTEREMIA (COAGULASE POSITIVE AND NEGATIVE)	
Site	No. of Episodes
Intravenous Catheter	6
Other Indwelling Prosthetic Devices	3
Unknown	14
Endometrium	1
Anterior Nares	1
Skin	1
Total	26

TABLE 7

SITES OF METASTATIC INFECTION IN FOUR PATIENTS WITH COAGULASE-POSITIVE STAPHYLOCOCCAL BACTEREMIA	
Site	No. of Patients
Kidney	3
Intervertebral Disc	1
Knee Joints (both)	1
Renal Artery	1
Mitral Valve	1
Left Ventricular Thrombus	1
Lung	1
Liver	1

of age or older while eight episodes occurred in younger patients. (The higher incidence among older patients is statistically significant ( $p < 0.01$ .) Three of 14 episodes in patients over 49 years of age ended in bacteremic death while no deaths occurred among episodes in younger patients.

Sixteen Caucasians experienced 18 episodes of staphylococcal blood stream invasion. This group of episodes was subjected to further analysis.

Only one of 18 bacteremic episodes caused by coagulase-producing staphylococci was complicated by hypotension. Nevertheless, three patients (16.6%) died as a



FIGURE 6

CRUDE INCIDENCE OF STAPHYLOCOCCAL BACTEREMIA  
AND BACTEREMIC DEATH IN RELATION TO HOST FACTORS

	NON-FATAL DIAG- NOSIS	ULTIMATELY OR RAPIDLY FATAL DIAG- NOSIS	EFFECTIVE ANTI- MICROB- IAL THERAPY	NO EFFECTIVE ANTI- MICROB- IAL THERAPY	LESS THAN 50 YEARS OLD	MORE THAN 49 YEARS OLD	FEMALES	MALES
NO. EPISODES	10	12	8	14	8	14	11	11
NO. DEAD	2 (20%)	1 (8.3%)	0 (0%)	3 (21.4%)	0 (0%)	3 (21.4%)	1 (9.1%)	2 (18.2%)

direct consequence of bacteremia. No significant differences were found in the distribution of staphylococcal bacteremias between men and women. Twelve episodes occurred in patients 50 years of age or older while only six episodes occurred in younger patients. The higher-than-expected incidence of *Staphylococcus Aureus* septicemia among older patients could not be explained by a greater incidence of "ultimately —" and "rapidly fatal" illnesses among older patients. Two deaths occurred in men over 69 years of age (one without predisposing illness, the other with multiple myeloma) and one death occurred in a previously healthy 75 year old woman. None of the three patients who died received effective antimicrobial therapy; each was infected with a "hospital-acquired" organism.

Among 15 episodes in Caucasians whose blood types were known, the distribution of blood groups O, A, B and AB was not significantly different from that predicted. No assessment of the effect of blood group substance on bacteremic shock or death was possible.

Of four episodes of bacteremia caused by coagulase negative staphylococci, three isolates were known to be resistant to penicillin-G and two were believed to represent "hospital-acquired" strains. (One of the latter two isolates was also recovered from an indwelling venous catheter, thus making such devices responsible for six of 26 episodes of staphylococcal bacteremia.)

#### ALPHA-HEMOLYTIC STREPTOCOCCAL SEPTICEMIA

Three episodes of blood stream invasion by non-Group A or D alpha-hemolytic streptococci occurred during the twenty-four months under scrutiny. Each episode presented clinically as subacute bacterial endocarditis. Fever prior to hospital admission was noted by each patient; two were known to have been ill for 17 and 21 days, respectively, before hospitalization. A heart murmur was present at the time of admission in two patients; two

of three patients had palpably enlarged spleens. Anemia was present upon admission to the hospital in two instances and red blood cell cylindruria in one episode. Only one patient was known to have had pre-existing (rheumatic) heart disease.

Twenty-two blood cultures were obtained from three patients, 21 of which yielded alpha-hemolytic streptococci in pure culture upon routine incubation. Isolates from two patients were tested for sensitivity to penicillin-G by the serial two-fold tube dilution method. Both isolates were inhibited by 0.02 units/ml of penicillin-G or less. Alpha-hemolytic streptococci recovered from blood cultures of the third patient were judged to be sensitive to penicillin-G after testing with the ten microgram paper disc.

All three patients were successfully treated with penicillin-G and streptomycin administered for 16 to 21 days. No patient experienced congestive heart failure while hospitalized; no episode of embolization was recognized.

#### STREPTOCOCCUS FECALIS SEPTICEMIA

Five episodes of Lancefield Group D Streptococcal bacteremia occurred during the 24 months under study. The entry site in each case was known to be either the bowel or genito-urinary organs. No episode was complicated by endocarditis. While blood stream invasion was judged to have caused shock in one patient, no bacteremic deaths occurred. In contrast to the three episodes of alpha-hemolytic streptococcal bacteremia in which each patient was less than 50 years old and in which no patient was felt to have had an "ultimately —" or "rapidly fatal" illness, four of the five episodes of Group D streptococcal septicemia occurred in patients over 49 years of age, three of whom had "ultimately —" or "rapidly fatal" pre-existing illnesses.

(*Streptococcus fecalis* and a member of the family

TABLE 8

SITE OF METASTATIC INFECTION IN SIX PATIENTS WITH CANDIDA SEPTICEMIA

Site	No. of Patients
Kidney	6
Heart	1
Liver	1
Pancreas	1
Lung	1
Gastric Mucosa	1

Enterobacteriaceae – *Aerobacter Aerogenes*, *Eschericia Coli* or *Proteus Mirabilis* – caused four of nine episodes of mixed bacteremia. One episode was complicated by shock; none ended in death.)

#### GROUP A STREPTOCOCCAL SEPTICEMIA

Bacteremia caused by the Lancefield Group A *Streptococcus* occurred in four patients. The genital tract was the site of entry in two instances and the tracheobronchial tree in two others. One episode complicated Group A *Streptococcal* puerperal sepsis from which recovery was uneventful while one episode occurring in a patient with metastatic melanoma was complicated by shock and death attributed to blood stream invasion. No instance of primary *streptococcal* pneumonia was observed nor were non-suppurative sequellae of Group A *Streptococcal* infection observed.

#### DIPLOCOCCUS PNEUMONIAE SEPTICEMIA

Six episodes of septicemia caused by *D. Pneumonia* were recorded during the twenty-four months under study. All isolates gained access to the blood stream from the respiratory tract. Of 21 blood cultures obtained from six patients, 18 yielded *D. Pneumoniae* in pure culture. One episode was complicated by bacteremic shock and one episode by pneumococcal meningitis. One patient (with meningitis) died several hours after admission to the hospital.

#### FUNGEMIA

As shown in Table 2, seven episodes of blood stream invasion by fungal species occurred during the twenty-four month period from January 1, 1965 to December 31, 1966. While five of the patients had illnesses classified as non-fatal per se, six of seven patients had iatrogenic impairment of host defense mechanisms through the use of indwelling urinary or venous catheters, or the administration of multiple antimicrobials, systemic corticosteroids or antimetabolite preparations. One episode of septicemia caused by an *Aspergillus* species occurred in a young woman after uterine instrumentation outside the hospital. No specific therapy was instituted and no complications of blood stream invasion were noted by the time of discharge on the fifth hospital day. Six of seven episodes were caused by *Candida Albicans* or by a *Candida* species not further identified.

Only one episode of *Candida* Septicemia was com-

plicated by death directly attributable to blood stream invasion (*C. Albicans*). However, all patients with *Candidemia* had evidence of metastatic infection at post mortem examination (Table 8). All patients demonstrated *Candiduria* during life. The portal of entry in two episodes was an intravenous catheter site. Of 23 blood cultures obtained from six patients at the times of suspected septicemia, each grew a *Candida* species in pure culture. Only one of the patients with *Candidemia* received a nominally effective course of therapy (with *Amphotericin-B*) and in this patient *Candidemia* persisted despite drug administration.

#### COMMENT

The emergence of Gram negative bacilli as principal agents of life-threatening infection was heralded in the latter half of the last decade by Weil and Spink,<sup>1</sup> Finland, Jones and Barnes,<sup>2</sup> and by Rogers.<sup>3</sup> Finland and coworkers<sup>2</sup> documented the dramatic decline of blood stream invasion by *Streptococcus Pyogenes* and virtual disappearance of pyogenic *streptococcal* bacteremic deaths, the marked decrease in numbers of deaths attributed to pneumococcal bacteremia, and the ascendancy of bacteremic episodes and deaths due to *Staphylococcus Aureus* during the years 1935 to 1957 at the Boston City Hospital. While bacteremia and bacteremic death caused by coagulase-positive staphylococci each increased approximately three-fold during that period, the incidence of bacteremia caused by *Proteus* species increased nine-fold and that of *E. Coli* bacteremia almost three-fold. No septicemic episodes caused by *Aerobacter Aerogenes* were recorded during 1935 or 1941 at the Boston City Hospital while between 40 and 50 episodes have been recorded in each year studied since 1947. The incidence of Gram negative bacteremias as a group increased approximately six-fold between 1935 and 1957, while the incidence of Gram negative bacteremic death increased approximately four-fold.

A mean incidence of 5.9 episodes of Gram negative bacillus blood stream invasion per 1000 general hospital admissions was recorded for men and women at University Hospital during the 24 months from January 1, 1965 to December 31, 1966. McCabe and Jackson<sup>4</sup> have cited an overall incidence of Gram negative bacteremia of 3.9 episodes per 1000 general hospital admissions during 1958 at the University of Illinois Research and Education Hospitals while DuPont and Spink<sup>5</sup> noted the incidence of Gram negative bacillus septicemia to have risen from 3.9 episodes per 1000 hospital admissions in 1958 to 8.4 episodes per 1000 admissions in 1965 at the University of Minnesota Medical Center. Fried and Vosti<sup>6</sup> recorded a rise in the incidence of Gram negative bacteremia from 0.7 episodes per 1000 hospital admissions in 1959-1960 to 2.5 episodes per 1000 admissions in 1965-1966 at the Palo Alto-Stanford Hospital Center.

Death as a direct consequence of blood stream invasion by Gram negative bacilli occurred 1.05 times per 1000 general hospital admissions at University Hospital (mean of male and female incidences). This incidence is slightly



lower than the highest incidence reported by McCabe and Jackson<sup>4</sup> and strikingly lower than the incidence of 4.6 deaths per 1000 admissions reported by DuPont and Spink.<sup>5</sup> Fried and Vosti<sup>6</sup> have noted the incidence of Gram negative bacteremic death to be 1.0 deaths per 1000 general hospital admissions during 1965 and 1966 at the Palo Alto-Stanford Hospital Center.

Despite the fact that less than one-half of general admissions to University Hospital during 1965 and 1966 were patients 50 years of age or older, approximately two-thirds of Gram negative bacteremic episodes occurred in this older age group as did all Gram negative bacteremic deaths, irrespective of the nature of any pre-existing illness. Similarly, the incidence of Gram negative shock was also strikingly increased in men and women over 49 years old, irrespective of underlying illness.

The high incidence of shock and death among blood group O patients who experienced Gram negative bacteremia does not permit ready explanation nor does the small number of patients with blood group B permit meaningful interpretation of the apparent protective effect of blood group B-specific glycoprotein. It should be noted, however, that DuPont and Spink<sup>5</sup> reported Gram negative bacteremic patients with blood group B experienced lower bacteremic mortality than patients with other blood groups regardless of the character of pre-existing illness. The authors suggested the presence of blood group A activity in some Gram negative bacilli. The sharing of blood group B antigenic determinants by human red blood cells and some strains of *E. Coli* has been investigated by Muschelo<sup>9</sup> and by Springer.<sup>10</sup>

The usefulness and safety of corticosteroid therapy in Gram negative bacteremic shock has not been established to the satisfaction of all investigators (Table 9) nor does the data herein afford additional insight.

The epidemiology and demographic features of serious staphylococcal infections have been amply reviewed by Cluff and his associates at the Johns Hopkins Hospital<sup>12</sup> and by Fekety.<sup>13</sup>

Less than 20% of bacteremic episodes occurring during 1964 and 1965 at University Hospital were caused by staphylococci. However, unlike blood stream invasion by Gram negative bacilli, approximately 15% of all episodes of staphylococcal bacteremia were complicated by metastatic infection. Cluff<sup>14</sup> has noted the incidence of metastatic abscesses in patients with staphylococcal bacteremia to be 34% during the years 1952 to 1965 at the Johns Hopkins Hospital (64 of 185 patients). Thus, continuing morbidity despite effective therapy in any patient having experienced staphylococcal blood stream invasion should signal a careful search for occult, metastatic infection.

Indwelling intravenous catheters were indicted as responsible portals of entry in almost 20% of staphylococcal bacteremic episodes, an incidence almost three times that reported by Cluff et al<sup>14</sup> among 185 consecutive episodes at the Johns Hopkins Hospital. While an explanation for such a high incidence is not apparent, it

TABLE 9

## CORTICOSTEROID THERAPY OF GRAM NEGATIVE BACTEREMIC SHOCK RELATED TO PATIENT SURVIVAL

<i>Author</i>	<i>No. Patients with Shock</i>	<i>No. Dead %</i>
Weil, Shubin and Biddle <sup>11</sup>		
Corticosteroid Rx*	30	17 (57)
No Corticosteroid Rx	84	70 (83)
Hodgin and Sanford <sup>7</sup>		
Corticosteroid Rx**	15	13 (87)
No Corticosteroid Rx	22	14 (63)
McCabe and Jackson <sup>4</sup>		
Corticosteroid Rx***	20	10 (50)
No Corticosteroid Rx	108	26 (24)

(Corticosteroid therapy initiated at time of bacteremia:

\* 300 mg or more of hydrocortisone/24 hours

\*\* 100-1200 mg of hydrocortisone/24 hours

\*\*\* therapeutic dose of hydrocortisone not stated)

should be noted that Moran, Atwood and Rowe<sup>15</sup> have reported that approximately 10% of intravenous catheters left in place without special care for longer than 96 hours can be expected to serve as sites for blood stream invasion by pathogenic bacteria.

Assessment of the roles of specific pre-existing illnesses in patients with staphylococcal septicemia at University Hospital was not undertaken because of the small number of patients. However, Cluff and associates<sup>14</sup> have noted the pre-disposing influences of congestive heart failure, renal insufficiency, diabetes mellitus, lympho-proliferative disease and bullous or exfoliative dermatitis upon the occurrence of staphylococcal blood stream invasion. These authors reported the mortality from staphylococcal bacteremia in patients with associated illness to be 50% while the mortality rate in bacteremic patients without prior illness was, by contrast, only 17%. Serious pre-existing illness among patients at University Hospital could not be shown to adversely affect the incidence or course of staphylococcal bacteremia.

The higher-than-predicted incidence of staphylococcal bacteremia among older patients at University Hospital was statistically significant and could not be attributed to other known factors. Age was not demonstrated to influence the incidence of staphylococcal bacteremia among patients at the Johns Hopkins Hospital.<sup>14</sup> However, the mortality rate among such patients over 49 years of age was 61% while only 32% of younger patients succumbed to septicemia.

All strains of *Staphylococcus Aureus* isolated from septicemic patients at University Hospital were known to be sensitive in vitro to methicillin. Bulger<sup>16</sup> has reported the recovery of a methicillin-resistant organism from a patient hospitalized at the Seattle Veterans Administration Hospital and has demonstrated the synergistic effect of cephalothin and kanamycin against nine such methicillin-resistant isolates.<sup>17</sup> The infrequency with which penicillin-sensitive strains were recovered from septicemic patients, whether or not infection was nosocomial, provides further support for the practice of employing a penicillinase-resistant penicillin, or cephalothin, in the



initial management of any patient suspected of having staphylococcal bacteremia.

Approximately 8% of septicemic episodes were caused by blood stream invasion by streptococci. The fecal origin of all five episodes of enterococcal bacteremia was not unexpected; nor was the respiratory tract origin of two of four isolates of Lancefield Group A streptococcus surprising. Two of four episodes of Group A streptococcal bacteremia had their origin in the genital tract, one of which presented clinically as an instance of puerperal sepsis with foul lochia rubra, high fever, leucocytosis and cultures of blood, urine and lochia positive for Group A streptococci. This episode, however, occurred after transfer of the patient to University Hospital from another medical center and could not be associated with the small outbreak of streptococcal puerperal sepsis reported by McCabe and Abrams from this hospital in 1964.<sup>18</sup> The skin and surgical wounds were portals of entry in nine of 19 episodes of Group A streptococcal bacteremia reported by Duma, Weinberg, Medrek and Kunz<sup>19</sup> during twenty-four months of observation at the Massachusetts General Hospital while the respiratory tract was implicated in only four instances and the genital tract in none. Similarly, among eight episodes of Group A streptococcal bacteremia occurring during an epidemic of streptococcal infections in southern New England in 1958-1959,<sup>20</sup> six originated at sites of streptococcal skin infection while the respiratory tract was the site of invasion in only two instances. Endocarditis was not a complication of Group A streptococcal bacteremia among patients in the present report; indeed, endocarditis caused by Lancefield Group A microorganisms must always be considered a rare event.<sup>19,20</sup> Three episodes of alpha-hemolytic, non-Group A or D streptococcal septicemia occurred, each of which presented as an instance of subacute bacterial endocarditis with persistent blood stream seeding from the involved cardiac structure. The declining role of streptococcus viridans in cases of bacterial endocarditis is well documented.<sup>21,22</sup> Among six episodes of endocardial bacterial infection in the present series of patients, three were caused by alpha hemolytic streptococci, two by Staphylococcus Aureus and one by Pseudomonas Aeruginosa.

All isolates of D. Pneumoniae from blood of patients at University Hospital gained access from the tracheo-bronchial tree. Five of six episodes occurred in patients with "ultimately —" or "rapidly fatal" illness and four of six patients were 50 years of age or older. Austrian and Gold<sup>23</sup> have noted the influence of patient age and the nature of underlying illness on the incidence and outcome of bacteremic pneumococcal pneumonia and have emphasized the lethality of Type III pneumococcal bacteremia in patients over 49 years old.

Braude and Rock<sup>24</sup> described a patient with acute disseminated moniliasis in 1959 and called attention to the apparent predisposing influence of antibacterial therapy upon the occurrence of candidiasis in their patient and in three others previously reported. Seelig<sup>25</sup> has extensively

reviewed the relationships between combined or broad-spectrum antimicrobial administration and Candida infections. Despite the fact that four of six patients with candidemia at University Hospital had non-fatal illnesses, all ultimately died with progressive systemic candidiasis. All had received multiple antimicrobial agents or systemic corticosteroid therapy prior to the recognition of systemic candidiasis. A bowel site served as the portal of entry in three patients and may have been the site of blood stream invasion in a fourth patient. No patient exhibited endocardial vegetations, splenomegaly, petechiae or major embolic phenomena, a finding in keeping with Louria's<sup>26</sup> distinction between disseminated candidiasis and Candida endocarditis.

### CONCLUSION

One hundred and thirty-nine episodes of septicemia were recorded at University Hospital, Boston, Massachusetts during 1965 and 1966. More than one-half of all episodes were caused by Gram negative enteric bacilli. The incidence of shock among patients with Gram negative bacteremia was 27.6%. Seventeen percent of patients suffering from Gram negative bacteremia died as a direct consequence thereof. Caucasian patients with blood group O experienced a significantly higher incidence of Gram negative bacteremic shock and death than did Caucasian patients with other blood groups. Fifteen percent of septicemic episodes were caused by Staphylococcus aureus; three deaths occurred among the patients with staphylococcal blood stream invasion. Patients 50 years of age and older experienced a significantly higher incidence of bacteremia, bacteremic shock and death attributable to blood stream invasion than did younger patients. Septicemia, especially Gram negative bacteremia, remains a significant cause of morbidity and mortality among hospitalized patients.

### ACKNOWLEDGMENT

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# The Importance of Weight-Bearing X-Rays in Knee Problems

LAWRENCE M. LEONARD, M.D.

The importance of weight-bearing x-rays of the knee has just recently been stressed in some of the specialty journals. The value of this type of x-ray is not generally

appreciated, but it may be very informative, as the following cases will show.

A recent article from the Lahey Clinic<sup>1</sup> felt that



Fig. 1-a

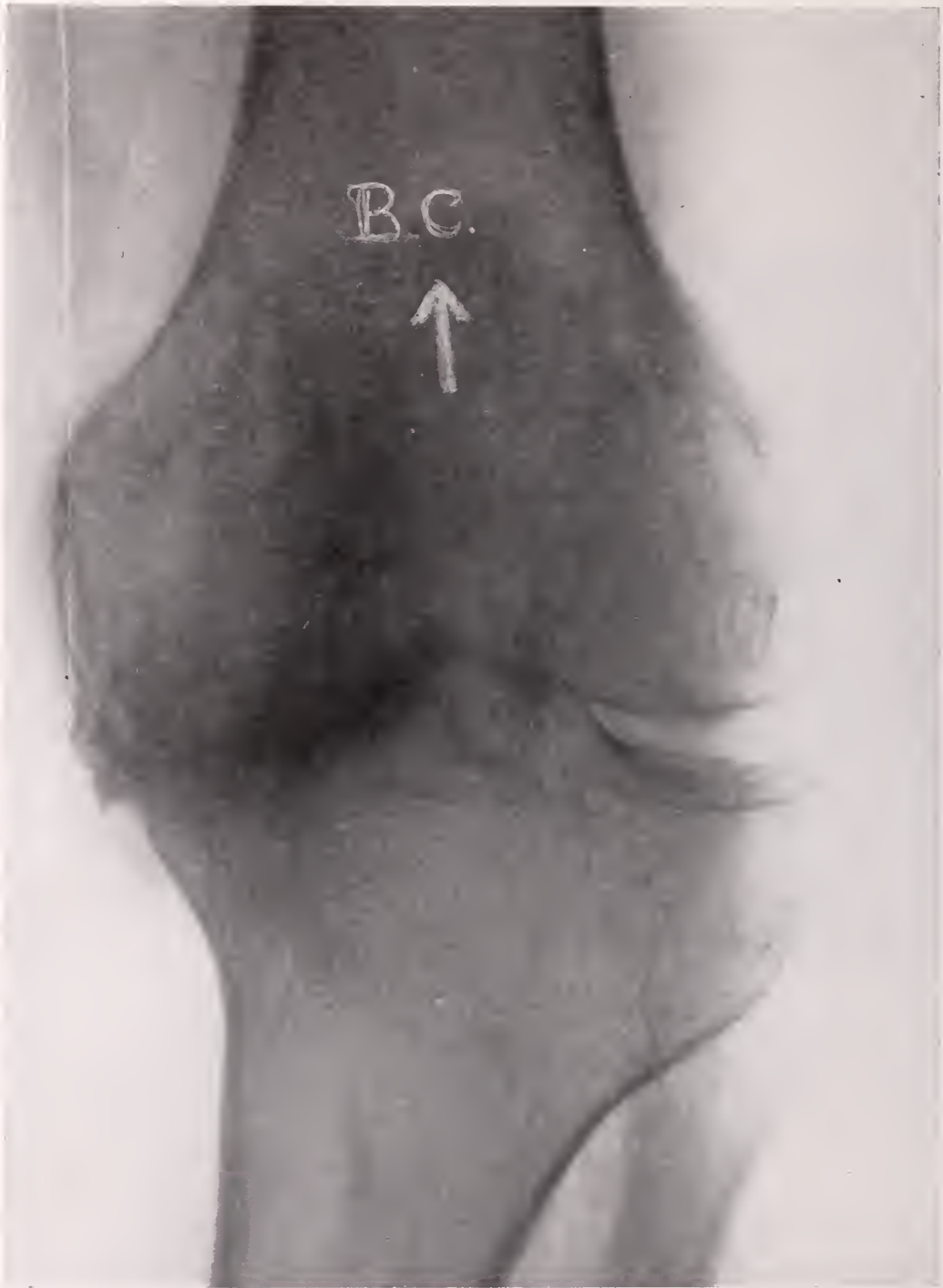


Fig. 1-b

"weight-bearing roentgenograms are a necessary part of the roentgenographic examination of the knee." An earlier study by Ahlback<sup>2</sup> was reviewed in the Yearbook of Radiology;<sup>3</sup> the editorial comment was, "The use of weight-bearing films is quite an eye opener. The technique should probably be used routinely for proper

evaluation." The x-ray is taken with the patient standing. His weight should be equally distributed on both feet, and the cone focused at the inferior pole of the patella, parallel to the joint surface.

On weight-bearing, marked loss of joint space, either medially or laterally, may be noted. This shows the de-





Fig. 1-c

gree of thinning or destruction of the articular cartilage of the joint. The x-ray in (Figure 1-a) shows degenerative osteoarthritic spurring of both medial and lateral compartments of the right knee. On this film, the joint space appeared to be preserved, but an x-ray of the patient's right knee taken with her standing (Figure 1-b) showed complete obliteration of the joint space medially. With complete loss of articular cartilage more than just

a joint debridement is necessary, and this patient was treated by tibial plateau prostheses, as advocated by Porter<sup>4</sup> (Figure 1-c). Not only may medial or lateral compartment osteoarthritis be noted, but very surprising degrees of gross subluxation may be apparent in the weight-bearing film, which is not apparent otherwise. Figure 2-a shows a patient's knee, taken with a standard non weight-bearing x-ray. It shows loss of joint space medially,



Fig. 2-a

and slight subluxation, but on weight-bearing (Figure 2-b), this subluxation is dramatically increased. This is the functional position of the patient's knee when walking. This was also corrected by tibial plateau prostheses, of different heights (Figure 2-c), so that not only could ligament slack be taken up, but also the varus deformity could be corrected. This was a stable knee postoperative-

ly, with no valgus or varus instability.

My partners and I have been using this technique with weight-bearing x-rays only recently, but in just a short time we have found a number of interesting patients to illustrate the importance of this examination. I think it should certainly be part of the x-ray examination of the patient with the arthritic knee.



Fig. 2-b





Fig. 2-c

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7 Bramhall Street, Portland, Maine 04102.

## Report of the President\*

THOMAS A. MARTIN, SR., M.D.

Another year has rolled around and it is mandatory by our staff by-laws you must be subjected to the so-called "Presidential Address." Please accept my apologies for presenting this in absentia due to circumstances beyond my control. However, this is the last time that I will impose upon you as a captive audience.

There have been many time-consuming meetings, i.e., Executive Committee, Audit, Educational, Utilization, Board, both regular and special, and in retrospect I wonder just what I have accomplished. However, the past four years as your representative on the Hospital Board has been an educational experience, albeit at times, extremely frustrating. From this experience, I have developed the highest respect and admiration to each and every one of these dedicated people who are wrestling with the financial problems of the Mercy Hospital in these days of "run away" inflation. It has been a privilege to represent you, the Mercy Hospital Medical Staff, for the past four years; I appreciate your confidence.

In this final opportunity to address you, I beg your indulgence and patience so that I may discuss with you some of the problems that face us today as physicians. Since health care has become the third or fourth largest industry in this country, all sorts of self-appointed and self-anointed experts have appeared on the scene to get a "piece of the action." With their appearance has come the clichés such as Non-system of Medical Care, the Medical Consumer and a host of others, according to their own particular interest. Somehow I doubt the sincerity of their apparent philanthropic mouthings and actions. My friends, Utopia is not that near at hand. For a few minutes I would like to discuss with you the so-called Medical Consumer.

Among the several groups of specialists in medical care which have proliferated in recent years are the medical economists. Since economics is far from a pure science, economists cannot point with great pride to dramatic cures of purely economic problems. Nevertheless, they have invaded the field of medical care presumably in an effort to improve what has been called a non-system and to straighten out the economic difficulties in which medicine finds itself. Economists are familiar with problems associated with the production of goods, with the methods of delivering them to the public and with the vagaries of the consumer who uses the product. It is not surprising therefore, that the terms used in medical care with which the economists are unfamiliar have been replaced by terms to which he is accustomed. Thus, in the economists' language, the physician becomes a part of the Health Industry. The patient becomes a consumer. To him, M.D.'s

practice becomes part of Health Care delivery. By the device of word substitution, the economist becomes an expert in a field which he might otherwise hesitate to enter. As physicians, we must not be misled by this word substitution game. There are many aspects of the practice of medicine which differ markedly from Industry. The consumer of individual products has an opportunity to examine a number of items made by different manufacturers and decides which one he wants to buy, if any. He also decides whether he can afford to buy the products. Most important of all, he also pays for them with his own money. Industrial concerns are necessarily much interested in the likes and dislikes of the consumer. The consumer must be made to feel he needs or wants the product and it will be the consumer who makes the final decision about what he purchases. Seldom will a third party be involved. The consumer of medical care does not operate at this basic level. Increasingly, it is not he but a third party who pays the bills. This may be the Welfare Department, the Federal or State Government, or a private insurance carrier. In any case, where the patient does not pay for the care of himself, he loses one of the characteristics of a consumer. When the medical consumer asks for medical care, the decision as to what he receives is only partially his. He selects the physician and may elect to have a private room and private nurse if he wishes to pay for them. However, decisions as to what care he purchases are made by his physician and other methods of the health team and not by the patient consumer, who is not qualified to do so. Since the patient does not pay directly for the product and neither makes the decision whether to buy the product nor what product to buy, he is certainly not a consumer in the usual sense. Although the patient qualifies as one who uses a commodity or service, he exercises few of the prerogatives of the consumer. All this would not be so important were it not for the increasing role which the consumer is either taking or being given in today's society. We are told that the community, that is, the consumer, will make the decision as to what hospital facilities are called for, what ambulance service is needed and what medical fees are appropriate as if medical care were a television set or an automobile or a can opener.

The physician is the largest purchaser of medical care in the sense that he dictates, to a great extent, what the patient consumer uses. The patient consumes only what he orders. Thus, it becomes ridiculous to assume that the community of patient consumers can make consumer decisions, and, in fact, it is the physician purchaser who really decides what is to be bought and a third party that pays much of the bill. This does not imply that the consumer should have no voice in the delivery of medical

\*Mercy Hospital Medical Staff, Portland, Maine.



care. We need to know what he expects to receive and what type of room or service and medical care he wishes. How promptly does he expect to be seen at the physician's visit? What does he expect in the way of house calls? How much is he willing that the insurer pay for these services, knowing that ultimately this cost will be reflected in his premium payments. Whether this expectation can or should be met cannot be decided by the consumer alone. Both the physician, the deliverer of the care and the insurer who has to pay the bill will ultimately play major roles in the decision. Medical care is largely a personal service – not an industrial commodity. The medical consumer in his own interest should not demand the right to make decisions which he is not qualified to do. Physicians are "care dealers" and not "car dealers."

Now I would like to discuss with you the physician's role as a member of the Health Team. These remarks are taken from an address by Dr. Russell B. Roth, Speaker of the AMA House of Delegates, and presented at the Third National Congress on the Socio-Economics of Health Care at Chicago, Illinois in March of 1969. Dr. Roth stated in his address that the hospital is the place where the greatest attention has been given to quality control with the development of accreditation inspection, tissue committees, medical audits, utilization review and all the rest of the things with which you are familiar. It is a place where man-power shortage perhaps stand out significantly in terms of too few nurses, difficulty in staffing emergency room or outpatient clinics, etc. It is also the place in which the massive hospital bills are generated and where the business office copes with the complexities of State and Federal Medical Care programs, with the Insurance Industries with their requirements, with Blue Cross and with delinquent accounts. Even so, the hospital is dealing with only about 5% of the people who are making demands on the medical care system or should be making demands upon it on any given day. It is estimated that about 80% of people consulting physicians on any given day have self-limited problems. Things might straighten out and spontaneously get well or do just as well if managed by faith healing or by grandmother's home remedies as long as nothing was done to make them worse. The great contribution of physicians is that he sorts out those who need only reassurance and perhaps a little palliative medication from that one who really needs further attention. Of course it is usually among the 20% who require the additional diagnosis or treatment that we find the 5% who become hospitalized. If these estimates are anywhere close to being correct, it means in terms of individuals that 95% of the demands for services of the medical profession are imposed upon physicians outside the hospital centers or at least apart from the inpatient hospital consideration. Physicians tend to be pretty busy taking care of sick people and tend to become somewhat insulated against the imposing list of things that other people think they ought to do. But they are asked, nevertheless, to be ever available to their public and to extend their personal care of these patients to

include sociological evaluations of the entire family. He should serve on hospital records committees, tissue committees, educational committees and executive committees. They should attend departmental conferences, journal clubs, regular staff meetings and continuing education seminars. They should be active in their County Medical Society, populate its committees and their attending specialties. They should attend refresher courses, State and National medical prevention programs and, of course, stay abreast of the literature at least by reading the fifteen or twenty digests and abstracts that are mailed to them weekly by helpful medical organizations and drug companies. He should be active in community affairs, on planning commissions, on boards of voluntary health agencies and should belong to at least one service club and do assorted charities and religious activities. A physician needs to give particular attention to hospital records, insurance forms, Medicare forms, Medicaid forms, requests for underwriting data for insurance companies, Social Security Disability questionnaires, VA disability applications and correspondence with patients and referring physicians. They should at all times stay in touch with their answering services, give generously to the United Fund, the hospital campaigns, the voluntary health agencies, a church, all fund-raising projects such as disadvantaged children, disabled veterans and the political party of their choice. Some physicians obviously try to do all this. Others say, "To Hell with it" and just do the best they can.

My friends, I predict that the decade of the 1970's will bring a great change in the practice of medicine as we have known it. This change, to many of us, will be painful and traumatic, but hopefully the profession will adjust to it.

Now, what has happened to Mercy Hospital in the past year? First and most important has been the survey and feasibility studies in regard to the drive for the new hospital with which most of you are already familiar. Secondly, I believe in importance is the recent opening of the new Coronary Care Unit which is beyond description, and next in order, in my opinion, would be the full-time staffing of our Emergency Division, which was inaugurated on January 1st of this year. Hence, Mercy has two firsts in the community and I believe in the entire State; in the Home Medical Service, which is solely due to the efforts of our Administrator, Sister Ann Cohan, and the full-time Emergency Division Department. In the years ahead, Mercy Hospital, true to its traditions and philosophy, is going to play an ever-increasing role in the delivery of the highest type of medical care to the Portland community. In the future, I would suggest that at monthly Staff meetings, at least several should be devoted to panel discussions of the hospital problems so that better communications would be established. These panels could consist of Board Members, Administration, Doctors, even representatives of third-party payers, such as representatives of Blue Cross, Medicare and other gov-

*Continued on Page 132*



## Monilial Esophagitis and Colitis

TIBOR DOBY, M.D.\*

Frequently, *Monilia* (*Candida Albicans*, Thrush) may be found in the sputum and feces of debilitated infants and older people with advanced malignancy or hemopoietic problems. There are statistics showing that in a high percentage of cases, death follows within eight

weeks of the massive appearance of monilia, and in this way, may represent the death knell for many carcinoma patients.<sup>1</sup> This pattern, however, has changed in recent years, and since the widespread use of larger doses of glucocorticoids and antibiotics, systemic manifestations have been reported with increasing frequency — meningitis, osteomyelitis, endocarditis, etc., being mentioned.<sup>2</sup> If diagnosis is not made fairly early, especially of gastro-

\*Chief of Radiology, Mercy Hospital, Portland, Maine 04101.



Fig. 1



Fig. 2

Figs. No. 1 and No. 2. Marked thickening of the mucosal lining of the cecum and ascending colon with spasticity of the transverse and descending colon. Tiny mucosal ulcerations. Swelling of the mucosa of the terminal ileum, increased fluid contents. All these are characteristic manifestations of severe ulcerative colitis and "backwash ileitis."

intestinal tract involvement, moniliasis may spread and cause fatal candida septicemia.<sup>3</sup>

The two cases presented here demonstrate that even in young able-bodied adults, who are not terminally sick, moniliasis develops especially if they have been medicated with antibiotics and corticosteroids.

*Case No. 1.* A 28-year-old man was admitted to the hospital because of rather abrupt onset of diarrhea followed within a few days by blood mixed with his stools. On occasions, he recalled having had episodes of diarrhea in the past year, but without blood at that time. He complained about tenesmus and cramps. No masses were felt in the abdomen.

X-ray examination showed typical findings of severe ulcerative colitis and "backwash ileitis" (See Figs. No. 1 and No. 2).

At sigmoidoscopy, diffusely erythematous granular spastic mucosa was found with pitting, suggesting some previous superficial ulceration and easy bleeding with minimal trauma. It was felt that this was a case of class III ulcerative colitis, and ac-

cordingly, the patient was started with sulfa preparations, anticholinergics and cortisone enemas.

Unfortunately, ten days passed without improvement. ACTH and Prednisone® 40 mg. daily was started. In the next ten days, although he improved somewhat, he still was losing weight and medication was changed from Gantrisin® to Polycillin®. Next week, he improved and started to gain weight, but new symptoms developed with increasing difficulty in swallowing and "heart burn."

X-ray examination of the esophagus was performed although similar examination was negative three weeks previously. At this time, however, swelling of the mucosa of the lower third of the esophagus was shown with ulcerations and other signs (See Figs. No. 3 and 4). The peristaltic activity of the duodenum and jejunum was exceptionally slow as was that of the esophagus, and the duodenum itself was dilated. The question of monilial esophagitis was raised<sup>4,5,6,7,8,9</sup> and the possibility of monilial duodenitis and enteritis was entertained.

Esophagoscopy showed the lower 8 cm. of the esophagus to be covered with yellowish adherent exudate which could be removed, but the exposed mucosa was red and was oozing slightly.



Fig. 3

In the biopsy specimen, marked interstitial inflammatory reaction was associated with ulcerations, pseudopolypoid hyperplasia, fibrin and filamentous structures were found suggesting hyphae. On the same day, sigmoidoscopy was also performed and the biopsy specimen of the mucosa showed grossly typical findings of ulcerative colitis. Additionally, fibrin was found with inflammatory cells and non-branching hyphae. The structures in the esophagus and rectosigmoid specimen were confirmed with Methenamine silver stains as *Candida Albicans*.

With these laboratory findings in mind, immediately Nystatin medication was instituted, but before it could have any effect, events took a different course.

The passing of several stools mixed with bright red blood was observed and this increased the next day into massive rectal hemorrhage. Emergency subtotal colectomy with ileostomy was performed. The patient received eight units of blood before and during the operative procedure. The Nystatin medication was maintained.

After two months of a somewhat uneven course, which was not without problems, the patient finally recovered. He was dis-

charged and after readmission, the ileostomy was closed. One and one-half years later, the patient enjoys good health and has adjusted well to his colectomy.

*Case No. 2.* A 38-year-old man (an M.D.) developed some cramps and bloody diarrhea which he thought to represent some kind of infectious enterocolitis. Nevertheless, ten days later he developed a cough and sore throat and took Ampicillin four times for three days. He had crampy watery stools, vomiting and shaking chills. The admitting diagnosis was viremia and Staph enteritis.

Laboratory examination of stool specimens showed Gram negative and Gram positive rods, but no Staphylococci and no enteric pathogens could be isolated. On the other hand, *Monilia* grew on Nickerson's media. Mycostatin® was begun immediately.

X-ray examination of the colon raised the question of possible early ulcerative colitis (See Figs. No. 5 and 6).

Rectal biopsy did not confirm the supposition and nothing was found in the specimen, except for interstitial edema and





Fig. 4

Figs. No. 3 and No. 4. Swelling and nodularity of the mucosa of the lower esophagus and tiny ulcerations. Indefinite contours due to fibrin covering the mucosa. Slow peristaltic activity and incomplete contraction of the esophagus.

plasma cell infiltration. Repeat stool examinations several days after vigorous Mycostatin medication were negative for *Monilia* but by that time the patient's diarrhea had subsided. Soon he was discharged.

All in all, it was felt that the patient was undergoing a viral infection with respiratory symptoms and enterocolitis, but the

antibiotic therapy started an overgrowth of *Monilia* which perpetuated the colitis and finally subsided after antifungal therapy.

#### DISCUSSION

In the first case, symptoms of esophagitis presented



Fig. 5

only after 15 days of Prednisone and 7 days of Polycillin therapy, but by that time, interstitial Monilial infection was found not only in the esophagus, but in the rectosigmoid biopsy as well. One wonders whether the massive hemorrhage could have been triggered by the superinfection of *Monilia* on the basis of the patient's severe ulcerative colitis.

This question bears special significance, since severe cases of ulcerative colitis are almost routinely treated with steroids and antibiotics. As in Case No. 2, *Monilia* overgrowth apparently can cause or perpetuate colitis.

#### SUMMARY

Severe ulcerative colitis in a young man was treated with antibiotics and steroids. Monilial esophagitis developed and overgrowth of *Monilia* in the colon probably played a role in this patient's profuse bleeding which eventually led to emergency subtotal colectomy. The other case suggests clinical manifestation of prolonged colitis as a consequence of *Monilia* overgrowth. Therefore, specific Monilial esophagitis and colitis should be considered as a possibility in symptomatic cases, in which medication favors the overgrowth of *Monilia*.



Fig. 6

Figs. No. 5 and No. 6. Thickening of the colonic mucosa, very marked spasticity. In spite of the fact that no definite mucosal ulcerations were demonstrated, the possibility of very early ulcerative colitis was entertained because of the uncontrollable diarrhea with some blood in the stool at the onset of the symptoms.

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DEAN H. FISHER, M.D.  
COMMISSIONER

## State of Maine

# Department of Health and Welfare

## Subsidized Family Planning Services in the State of Maine: A Synopsis

PETER BAADE\*

There is an estimated \$450,000 expended annually in Maine for publicly funded family planning programs. Of that amount, the Office of Economic Opportunity, through its various community action programs, spends \$350,000. The balance is expended by the Maine Department of Health and Welfare. While these figures by themselves have little meaning, they are indicative of the major source of family planning efforts as they exist presently within this State. Although the Department of Health and Welfare, through its Division of Child Health, has had an active family planning program since 1966, it has had a stricter medical definition. Its goal has been preventive treatment of high risk mothers through the provision of contraceptive efforts and concomitantly the reduction of the infant mortality and morbidity rate. Historically, this has been an appropriate focus within the context of a maternal and child health agency. However, as the only State agency with an active family planning program, this focus has been challenged. The question has yet to be adequately resolved and because of the public demand, must be held in abeyance until a more appropriate entity can be developed within the structure of the Department of Health and Welfare or through some other mechanism. The key to this quandary is the now widely accepted belief that the capacity to limit the size of one's family is considered a health right! This is the position of a variety of exotic sources, but more significantly, it is shared by the Federal Administration.

In 1969, President Richard Nixon established the following goal for the public health systems of the Federal Government: five million women who are now considered in need of family planning services but for financial and other reasons are unable to attain them, will receive adequate family planning within a five-year period. Thus, rather dramatically, what once was a medically directed public health service, has now become a health related social welfare policy with dimensions and implications beyond the role traditionally assigned to a maternal and

child health program. The achievement of this goal, of course, has characterized the efforts of the Office of Economic Opportunity, but increasingly, is manifested as a major goal of the United States Department of Health, Education and Welfare. To this end, the National Center for Family Planning Service was established in October 1969, as a sub-division of the Health Services and Mental Health Administration. Its objectives are to plan and develop a program that would coordinate the existing family planning activities within the Department of Health, Education and Welfare, and to provide financial support through grants for family planning services. While earlier programs continue to function throughout the country, such as the Maternal and Infant Care project, the trend is to establish a program with wider dimensions.

To quote from the National Center's guidelines: "Together the grant authority of the Office of Economic Opportunity and the National Center represent the major federal effort intended to support subsidized family planning services in communities throughout the country." The continuance of this wider scope was reinforced in January 1971, with the passage of the Family Planning Services and Population Research Act (P.L. 91-572). The stated objectives of this combined effort at the federal level is "to provide information, services and supplies in order to improve maternal health and insure that individuals have freedom of choice to determine the spacing of their children and the size of their families. Adequate family planning services will be directed toward: 1) reducing maternal and infant morbidity and mortality, 2) reducing the incidence of illegal abortions, 3) providing an entry to general health care services to individuals and families who previously did not have access to such services, 4) providing continuity of medical supervision for women of child bearing age and, 5) providing an opportunity to low income individuals and families to improve their social and economic conditions."

The Department of Health and Welfare understands its objective within this context to be the reduction of the rate of undesired pregnancies and maintain the lowest level achievable. Undesired pregnancies are defined in

\*Director, Family Planning, Division of Child Health, Department of Health and Welfare.

three categories: 1) pregnancies undesired because of high risk death or disability to fetus because of genetic factors, 2) pregnancies undesired because of poor health of maternal host, 3) pregnancies undesired because of the high risk of the social well-being of the family unit and therefore a risk to the fetus itself. In order to provide services to the identified target population, the Department of Health and Welfare presently has working agreements with fifteen family planning programs throughout the State. Three of these programs are hospital based, one is operated by a community health council and the remainder are family planning programs funded by the Office of Economic Opportunity.

While the extent and nature of the Department's involvement varies with the individual characteristics of these facilities, the one commonality is to insure the availability of appropriate medical attention, the availability of prescribed contraceptive methods and that a Pap smear is taken at the recommended regularity. Two-thirds of the 2500 women presently receiving service within the State attain it through a community action family planning program. It might be noted at this juncture, fiscal support for these direct services is only one aspect of the total family planning program as presently envisioned by the Department of Health and Welfare. It is considered essential that a data collection and retrieval system be instituted in order for the Department to more accurately measure the need for direct services and the impact of such services when provided. It is anticipated that such a system will be implemented no later than December 1971.

The present pattern of cooperative effort at the direct service level, i.e., facilities aforementioned, is expected to continue for at least the next two years. It is clear to those participants in this endeavor that the present delivery system is not without its deficiencies. The Department anticipates, with the addition of training personnel to its staff, that the level of effectiveness of the operational programs will improve as a result of a systematized training program and that the overall coordinating efforts of the Department will further enhance the quality of service. However, this delivery mechanism cannot be expected to continue substantially beyond 1973, regardless of how well-refined or improved the quality of service might become.

The emergence of the National Center of Family Planning Services and its supporting legislation will lead to a further consolidation of family planning activities on the federal level in one agency. This ultimately will mean that OEO grants to local community action programs for family planning purposes will be greatly reduced if not entirely terminated. Further, the intent of OEO when funding any program is to enable it to initiate a delivery system which can ultimately sustain itself at the local level. Therefore, by design, further federal funding to our regional programs throughout the State is short termed. It is clear that the withdrawal of OEO monies will leave a significant component of the state-wide struc-

ture without operational funding. There are at least three alternatives which can be considered at this time. 1) The entire program as a manifestation of the contemporary "health rights" doctrine be terminated and family planning services be restricted to specific medically related needs as defined by the traditional maternal and child health concept. This alternative, theoretically, would leave unattended those families whose social economic resources are insufficient to provide for additional members, and, in general, would be contrary to what is increasingly an expected public health policy which is defined as "the freedom of choice to determine the spacing of children and the size of families." 2) The Department of Health and Welfare could assume the administrative task of maintaining the existing local and regional facilities with the necessary massive federal fiscal aid. Whilst conceivable, this alternative carries with it the inherent difficulties of other massive programs presently administered by the Department. It would also reduce the input of professionals, para-professionals and consumers at the local and regional level and further reduce the degree of efficiency and effectiveness that local autonomy can provide. 3) This alternative, unfortunately, lacks a precedent by which its feasibility can be measured or anticipated. It would require the formation of a statewide body comprised of the various professional, governmental and citizens' groups presently providing family planning services and other responsible and interested citizenry with a board of directors drawn from these members. Based upon evidence from the existing state-wide structure, only a small paid administrative staff would be anticipated. The existing operational programs could affiliate with this entity through a structure similar to that envisioned for the A and B agencies created by P.L. 89-749. In fact, it would seem logical that there would be direct linkage between the comprehensive health organizations and any family planning service delivery system. A private, non-profit organization of this nature presently is eligible for direct, unmatched grants from the National Center for Family Planning Services and in instances where formula grants were required, this organization could be the recipient of donations from the local and private sectors which would relieve a portion of the burden presently carried by monies generated through the State tax systems. While lacking the uniformity and conformity of a governmental agency, such an endeavor would maximize the ability of the providers of family planning services to influence the methods of delivery and therefore the quality of the service. Because of its decentralized nature, the structure of the delivery system would enhance responsiveness to local and regional needs and reduce the administrative awkwardness frequently associated with centralized government operated programs.

There are perhaps other alternatives to the present system of subsidized family planning services which can be considered, however, those mentioned are the only ones to suggest themselves thus far.



# Maine Heart Association Notes

20 Winter Street, Augusta, Maine



## Highlights of Auscultation in Congenital Heart Disease — II

JOSEPH K. PERLOFF\*

*The Pulmonary Orifice* — The midsystolic murmur of isolated congenital valvular pulmonic stenosis is typically loudest in the second left intercostal space and radiates upward and to the left. The length of the murmur varies directly with the degree of obstruction so that in mild pulmonic stenosis the murmur ends before both components of the second heart sound, whereas in severe pulmonic stenosis the murmur goes through aortic closure but necessarily ends before the delayed soft or inaudible sound of pulmonary valve closure. The murmur is introduced by a pulmonic ejection sound which often distinctively wanes with expiration and wanes with inspiration. Severe obstruction is associated with powerful right atrial contraction which distends the right ventricle in presystole and in so doing generates an atrial or fourth heart sound. Specific attention should be called to the systolic murmur that accompanies stenosis of the pulmonary artery and its branches, a congenital malformation that often follows maternal rubella. These murmurs are widely distributed in the right chest, axilla, and back, and must be sought by auscultation at non-precordial sites during quiet respiration.

When one speaks of pulmonary regurgitation, the high frequency blowing Graham Steell murmur comes to mind. However, pulmonary regurgitation may occur without pulmonary hypertension when there is a congenital or acquired anatomic defect of the valve itself, and this murmur differs from that of Graham Steell. The murmur begins at an interval after the second heart sound, is crescendo-decrescendo in shape, ends well before the next first heart sound, and is low to medium pitched since a low diastolic pressure in the pulmonary trunk results in a low rate of regurgitant flow.

*The Atrial Septum* — Atrial septal defect can be one of the most readily diagnosed congenital anomalies of the heart although from an auscultatory point of view, the malformation is often overlooked because of the relatively inconspicuous murmur. It should be borne in mind that the *defect itself* is acoustically silent and the shunt is diastolic; when the right ventricle ejects the large stroke volume accumulated in diastole, a relatively short grade 2-3

pulmonic systolic murmur is generated. The right ventricle takes longer to expel its large stroke volume so the second component of the second heart sound (pulmonary closure) is delayed; furthermore, the physiology of the circulation in atrial septal defect results in *fixed* splitting of the second heart sound which means that the split remains unchanged during respiration.

The soft murmur of atrial septal defect may be mistaken for an innocent systolic murmur, especially in children. However, the usual innocent murmur is a vibratory, buzzing, pure to medium frequency event that is best heard along the lower sternal edge and toward the apex and is accompanied by *normal* splitting of the second heart sound. In addition, *complete right bundle branch block* is associated with wide splitting of the second heart sound but usually not with *fixed* splitting and hence can be distinguished from the wide fixed splitting of the atrial septal defect.

*The Ventricular Septum* — The typical holosystolic left sternal edge murmur of ventricular septal defect is well known. Progressive pulmonary hypertension decreases the left to right shunt and shortens the murmur; when the shunt is reversed (Eisenmenger's Complex), the murmur through the defect is abolished. It is important to recognize that an early systolic murmur can also occur with *very small* non-pulmonary hypertensive ventricular septal defect in which the shunt is interrupted in latter systole. Such murmurs are soft, pure, high frequency, and quite localized at the mid to lower left sternal edge; as times goes on these murmurs may disappear because of spontaneous closure of the defect.

Fallot's tetralogy — the commonest cyanotic congenital cardiac defect above age 4 years — has been taken to represent a large ventricular septal defect upon which varying degrees of pulmonic stenosis are imposed. Progressive right ventricular outflow obstruction decreases the left to right interventricular shunt and shortens and finally abolishes the holosystolic murmur leaving an isolated midsystolic murmur of pulmonic stenosis. As obstruction increases further, right ventricular blood is shunted through the ventricular septal defect into the aorta; accordingly, pulmonary flow decreases, cyanosis increases, and the pulmonic stenotic murmur progressively shortens and softens disappearing completely with pulmonary atresia.

*The Great Vessels* — When an uncomplicated patent ductus arteriosus joins the great vessels, a

\*Department of Medicine, Georgetown University School of Medicine, Division of Cardiology, Georgetown University Hospital, Washington, D. C.

Prepared by the Maine Heart Association for this Journal.



characteristic continuous machinery murmur peaks around the second heart sound and is maximal at the left base. Several words of caution are appropriate. Occasionally a loud venous hum in young children transmits below the clavicles and is mistaken for a patent ductus arteriosus; this error can be avoided by compressing the deep jugular veins, a maneuver that abolishes the hum. In large patent ductus, progressive pulmonary hypertension decreases the left to right shunt so that the continuous murmur shortens, then becomes systolic, and when the shunt is reversed, disappears entirely. At this point, the recognition of patent ductus does not depend upon auscultation; instead, the presence of differential cyanosis (blue toes and pink fingers) makes the diagnosis.

#### *The Myocardium —*

**Hypertrophy** — Increased force of atrial contraction usually distends a hypertrophied ventricle in presystole. Atrial or fourth heart sounds accompany the presystolic distention and are useful signs of hypertrophy such as in aortic stenosis or systemic hypertension on the left side and pulmonic stenosis or pulmonary hypertension on the right. In the pulmonary hypertension of emphysema, the atrial sound is often heard in the epigastrium since all of the heart sounds — including a loud pulmonary closure sound — are damped because of the large anteroposterior chest dimensions.

**Failure** — Third heart sounds are physiologic in children and young adults but pathologic in older

subjects. Ventricular failure is a common cause of abnormal third heart sounds and should be specifically sought with light touch of the stethoscopic bell in all patients in whom heart failure is suspected. It is a point of interest that the effect of cardiac infarction on the left ventricular myocardium commonly results in the need for an increased distending force that is provided by augmented atrial contraction; atrial or fourth heart sounds are prevalent in this context.

An ischemic left ventricle may take longer than normal to eject so aortic valve closure may fall *after* pulmonary closure causing reversed or paradoxical splitting of the second heart sound. The commoner cause of paradoxical splitting however is left bundle branch block or a right ventricular pacemaker which is its electrical equivalent.

**Constriction** — Myocardial constriction — as in constrictive pericarditis — results in high atrial pressures and rapid flow into nondistensible ventricles. Under these circumstances, loud early third heart sounds occur and have been called "early diastolic sounds" of constrictive pericarditis. Similar sounds occur in the restrictive form of primary myocardial disease.

**Summary** — Modern instrumentation has not eclipsed the need for sophisticated auscultation. On the contrary, clinical research has gone far in clarifying the meaning of auscultatory events in acquired and congenital heart disease and has increased the value of the stethoscope as a clinical tool.

#### SEPTICEMIA REVISITED, 1965-1966 — *Continued from Page 100*

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# Program - 118th Annual Session Maine Medical Association

June 13, 14, 15, 1971

The Colony, Kennebunkport

Arranged by the Scientific Committee

L. ARMAND GUTE, JR., M.D., Waterville  
Chairman

BRADLEY E. BROWNLOW, M.D., Blue Hill

ROBERT H. PAWLE, M.D., Falmouth

The Scientific Program of the annual meeting of the Maine Medical Association is made possible by the cooperation and assistance of the several organizations:

Maine Chapter, American Academy of General Practice

Maine Chapter, American College of Surgeons

Maine Academy of Orthopedic Surgeons

Maine Medico-Legal Society

Maine Trauma Committee

Ciba Pharmaceutical Company  
Summit, New Jersey

The Colony  
Kennebunkport, Maine

Geo. C. Frye Co.  
Portland, Maine

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Eli Lilly and Company State Medical Convention Program  
Indianapolis, Indiana

Merck Sharp & Dohme Postgraduate Program  
West Point, Pennsylvania

Maine Surgical Supply Co.  
Portland, Maine

Smith Kline & French Laboratories  
Philadelphia, Pennsylvania

E. R. Squibb & Sons, Inc.  
New York, New York

## *Specialty Groups*

Maine Society of Anesthesiologists

Ear, Nose and Throat Group

Maine Society of Internal Medicine

Maine Thoracic Society

Section on Ophthalmology of the M.M.A.

Maine Psychiatric Association

Maine Radiological Society

For this cooperation and support, the members of the Scientific Committee are grateful.

## Information

### Registration:

Registration throughout the session will be in the Lobby at The Colony. Registration fee \$2.00.

Sunday, June 13 — 9:00 A.M. to 5:30 P.M.

Monday, June 14 — 9:00 A.M. to 6:00 P.M.

Tuesday, June 15 — 9:00 A.M. to 4:30 P.M.

**Telephone:** The number at The Colony is Kennebunkport, (207) 967-3331.

### Visiting Delegates:

Introduction of Visiting Delegates will take place at meetings of the House of Delegates on Sunday, June 13.

### Technical Exhibits:

This year twenty-two companies are contributing to the success of the annual session program by participating in the Technical Exhibits. A list of the exhibiting companies and representatives will be found on page 124 of this program.

Please show your appreciation for the support of these companies by visiting these exhibits.

### Badge Code:

Badges with green borders indicate Officers, Past Presidents, Delegates and Alternate Delegates of the M.M.A.; yellow borders, members of the M.M.A.; blue borders, guests; red borders, exhibitors; and plain white for the members of the Woman's Auxiliary.

## Sunday, June 13

9:30 A.M. First Meeting of the House of Delegates

Call to order: LINUS J. STITHAM, M.D., President-elect

Presiding: Speaker of the House, ROBINSON L. BIDWELL, M.D.

Opening Address: WALTER C. BORNEMEIER, M.D., President, American Medical Association, Chicago, Illinois

Presentation of the A. H. Robins' Physician Award for Community Service

12:30 P.M. Luncheon

3:00 P.M. Second Meeting of the House of Delegates

**General Assembly** (Immediately following the House of Delegates — approximately 4:30 P.M.)

Election of President-elect

7:00 P.M. Lobster Bake

## Scientific Program

1:30 to 5:00 P.M.

*Welcome* — L. ARMAND GUITE, JR., M.D.

**Sponsored by the Maine Chapter, American College of Surgeons, the Maine Trauma Committee, and the Maine Academy of Orthopedic Surgeons**

1:30 P.M. **Business Meeting, Maine Chapter, American College of Surgeons**

2:00 P.M. **Symposium: Emergency Medical Care**

3:30 P.M. **Panel Discussion: Problems in Delivery of Emergency Medical Services**

6:00 to 7:00 P.M. **Social Hour, Dutch Treat, Ballroom**

7:30 P.M. **Annual Banquet**

Presentation of Honorary Pins

Speaker: WALTER C. BORNEMEIER, M.D., President, American Medical Association, Chicago, Illinois

President's Address, CHARLES R. GLASSMIRE, M.D.

## Monday, June 14

### Scientific Program

9:30 A.M. to 12:30 P.M.

*Welcome* — BRADLEY E. BROWNLOW, M.D.

**Sponsored by the Maine Chapter, American Academy of General Practice**

9:30 A.M. **Aggressive Management of Cardiogenic Shock**

J. WARREN HARTHORNE, M.D., Assistant Physician, Massachusetts General Hospital and Assistant Professor of Medicine, Harvard Medical School, Boston, Massachusetts

10:30 A.M. **Assessment of Equipment and Technology for Acute Care**

JOEL J. NOBEL, M.D., Scientific Director, The Emergency Care Research Institute, Philadelphia, Pennsylvania

11:30 A.M. **Subject: To be announced**

GERALD ROSENTHAL, Ph.D., Professor of Economics, Brandeis University, Belmont, Massachusetts

12:30 to 2:00 P.M. Luncheon

## Tuesday, June 15

### Scientific Program

9:30 A.M. to 12:30 P.M.

*Welcome* — ROBERT H. PAWLE, M.D.

**Scientific speakers are supported by a grant from the Merck Sharp & Dohme Postgraduate Program**

9:30 A.M. **The Role of Selective Angiography in the Diagnosis and Control of Gastrointestinal Hemorrhage**

STANLEY BAUM, M.D., Assistant Radiologist, Graduate Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania

10:30 A.M. **Subject: To be announced**  
WILLIAM SHARPE, JR., M.D., Psychiatrist, The Counseling Center, Bangor, Maine

11:30 A.M. **Step Up Emergency Health Services in the Community**

DAVID N. KLUGE, M.D., Clinical Assistant Professor of Surgery, University of Rochester School of Medicine and Dentistry, Rochester, New York

12:30 to 2:00 P.M. Luncheon



## Scientific Program

2:00 to 4:00 P.M.

*Welcome* — L. ARMAND GUTE, JR., M.D.

**Sponsored by the Maine Medico-Legal Society**

*Presiding* — RICHARD C. WADSWORTH, M.D., Bangor

**Problems and Solutions in Medical Malpractice**  
MOE LEVINE, Esq., Former Governor of American Trial Lawyers and Director, New York State Trial Lawyers, Mineola, New York

6:30 P.M. Dinner

Presentation of Golf Prizes by  
DANIEL R. SHIELDS, M.D., Lewiston  
Chairman, Golf Tournament

## Specialty Group Meetings

**Monday, June 14**

2:00 to 4:00 P.M.

### MAINE PSYCHIATRIC ASSOCIATION

MORRIS J. SELIGMAN, M.D., Togus, presiding

**Current Status of the A.P.A. and Psychiatrists**  
HARRY H. BRUNT, JR., M.D., Director, Psychiatric Services, Monmouth Medical Center, Long Branch, New Jersey

### MAINE SOCIETY OF INTERNAL MEDICINE AND THE MAINE THORACIC SOCIETY

1:30 P.M. Business Meeting: Maine Society of Internal Medicine

Subject: To be announced  
BRUCE R. BROWN, M.D., Worcester, Massachusetts

**Diagnosis and Treatment of Chronic Obstructive Pulmonary Disease**  
MYRON STEIN, M.D., Physician-in-Chief, The Memorial Hospital, Pawtucket, Rhode Island and Professor of Medical Science, Brown University, Providence, Rhode Island

### MAINE SOCIETY OF ANESTHESIOLOGISTS

### SECTION ON OPHTHALMOLOGY OF THE M.M.A.

**Tuesday, June 15**

10:00 A.M. — Business Meeting

### MAINE MEDICO-LEGAL SOCIETY

RICHARD C. WADSWORTH, M.D., Bangor, presiding

2:00 to 4:00 P.M.

### MAINE RADIOLOGICAL SOCIETY

TIBOR DOBY, M.D., Portland, presiding

**Seizures, Strokes and Skulls**  
B. ALBERT RING, M.D., Associate Professor of Neuroradiology and Radiologic Anatomy, Departments of Radiology and Anatomy, University of Vermont College of Medicine, Burlington, Vermont

### EAR, NOSE AND THROAT GROUP

#### HONORARY PINS

Presentation of the Association's Honorary Pins will be made by Charles R. Glassmire, M.D., President of the M.M.A., at the Annual Banquet, Monday evening, June 14 at 7:00 P.M.

#### FIFTY-YEAR PINS

Fifty-Year Lapel Pins will be presented to the following members who were graduated from Medical School in 1921:

**Androscoggin County**  
Eustache N. Giguere, M.D., Lewiston  
Bowdoin Medical School

**Cumberland County**  
Leon Babalian, M.D., Portland  
School of Medicine of Paris

Edward Blumberg, M.D., Brooklyn, New York  
University of Leipzig Faculty of Medicine, Saxony

**Oxford County**  
Henry M. Howard, M.D., Rumford  
Bowdoin Medical School

#### FIFTY-FIVE-YEAR PINS

Fifty-Five-Year Pins will be presented to the following members who received Fifty-Year Pins in 1966:

**Cumberland County**  
George O. Cummings, Sr., M.D., Portland  
Bowdoin Medical School

Herman C. Petterson, M.D., Chebeague Island  
Hahnemann Medical College

**Hancock County**

Harold S. Babcock, M.D., Castine  
Jefferson Medical College

**Somerset County**

Maurice E. Lord, M.D., Lake Placid, Florida  
University of Vermont College of Medicine

**SIXTY-YEAR PINS**

Sixty-Year Pins will be presented to the following members who received Fifty-Year Pins in 1961:

**Cumberland County**

James Patterson, M.D., Portland  
Rush Medical College

**Knox County**

Fred G. Campbell, M.D., Warren  
Baltimore Medical College

**Oxford County**

Lester Adams, M.D., Thomaston  
Johns Hopkins University School of Medicine

**Piscataquis County**

Edwin T. Wyman, M.D., Brookline, Massachusetts  
Tufts University School of Medicine

**Somerset County**

Merlon A. Webber, M.D., Pittsfield  
Bowdoin Medical School

**Waldo County**

Carl H. Stevens, M.D., Belfast  
Bowdoin Medical School

**SEVENTY-YEAR PIN**

A Seventy-Year Pin will be presented to the following member who received his Fifty-Year Pin in 1951:

**York County**

Ansel S. Davis, M.D., Springvale  
Bowdoin Medical School

**SPECIAL NOTICES****Council Meetings**

The Council will meet on Saturday, June 12 and daily throughout the session at a time and place to be announced.

**Dancing**

There will be dancing every evening in the Marine Room following the program.

**Golf Tournament**

Daniel R. Shields, M.D., Lewiston, Chairman

**Film**

"Depression" — Monday, June 14, 8:30 a.m.

**Luncheon**

Maine Academy of Orthopedic Surgeons — Monday, June 14.

**Visiting Delegates**

The Connecticut State Medical Society  
NORMAN H. GARDNER, M.D., East Hampton  
BERNARD O. NEMOITIN, M.D., Stamford

The Massachusetts Medical Society

New Hampshire Medical Society  
FRED F. DEBOLD, M.D., Keene

Medical Society of the State of New York  
THOMAS F. MCCARTHY, M.D., Bronx

The Rhode Island Medical Society  
HANNIBAL HAMLIN, M.D., Providence

Vermont State Medical Society  
THOMAS D. TRAINER, M.D., Burlington

**Delegates to Out-of-State Meetings**

The Connecticut State Medical Society  
NORMAN W. SAUNDERS, M.D., Portland

The Massachusetts Medical Society  
STANLEY E. HERRICK, JR., M.D., Lewiston

New Hampshire and Vermont State Medical Societies  
ASA C. ADAMS, M.D., Orono

Medical Society of the State of New York  
CHARLES R. GLASSMIRE, M.D., Portland

The Rhode Island Medical Society  
LEONARD G. MIRAGLIUOLO, M.D., Bangor

## County Delegates

### FIRST DISTRICT

#### Cumberland County Medical Society

*Delegates:* Douglas R. Hill, M.D., South Portland, Secretary  
(2 years)

Robert H. Pawle, M.D., Falmouth  
Howard P. Sawyer, Jr., M.D., Portland  
Harold N. Burnham, M.D., Gorham  
Kirk K. Barnes, M.D., Brunswick  
Charles E. Skillin, M.D., Portland  
Alfred E. Swett, M.D., Portland  
Joseph F. Stocks, M.D., Portland  
(1 year)  
George F. Sager, M.D., Portland  
John R. Davy, M.D., Portland  
Paul V. Davis, M.D., Bridgton  
Robert P. Timothy, M.D., Portland

#### *Alternates*

(2 years)  
Walter B. Goldfarb, M.D., Portland  
Lloyd G. Davies, M.D., Cape Elizabeth  
Stanley W. Kent, M.D., Portland  
Wilhelm H. J. Van Deventer, M.D., Brunswick  
Henry B. Finks, M.D., Portland  
John T. Libby, M.D., Portland  
Frederick B. Clark, M.D., Portland  
(1 year)  
Winton Briggs, M.D., Cape Elizabeth  
Douglass C. Pennoyer, M.D., Portland  
Domenico A. Santoro, M.D., Portland  
Richard C. Dillihunt, M.D., Portland

#### York County Medical Society

*Delegates:* Charles W. Kinghorn, M.D., Kittery, Secretary  
Carl E. Richards, M.D., Sanford  
Paul S. Hill, Jr., M.D., Saco  
Thomas Anton, M.D., Biddeford

#### *Alternates*

Kenneth E. Leigh, M.D., York  
Maurice Ross, M.D., Saco  
Roger J. P. Robert, M.D., Saco

### SECOND DISTRICT

#### Androscoggin County Medical Association

*Delegates:* Donald L. Anderson, M.D., Lewiston, Secretary

Charles W. Steele, M.D., Lewiston  
Joseph J. Rando, M.D., Lewiston  
John W. Carrier, M.D., Lewiston  
Thomas F. Shields, M.D., Lewiston  
Gilbert R. Grimes, M.D., Lewiston

#### *Alternates*

J. Paul Nadeau, M.D., Lewiston  
Daniel R. Shields, M.D., Lewiston  
Cyprien L. Martel, Jr., M.D., Lewiston  
Ralph Zanca, M.D., Lewiston  
Lionel R. Tardif, M.D., Lewiston

#### Franklin County Medical Society

*Delegates:* Hays G. Bowne, M.D., Farmington, Secretary  
Paul E. Floyd, M.D., Farmington

#### *Alternate*

Wallace H. Duffy, M.D., Farmington

#### Oxford County Medical Society

*Delegates:* Stephen B. Dewing, M.D., Harrison, Secretary  
John R. Fenger, M.D., Norway  
Linwood M. Rowe, M.D., Rumford

#### *Alternates*

Walter G. Dixon, M.D., Norway  
Alfred Oestrich, M.D., Rumford

### THIRD DISTRICT

#### Knox County Medical Society

*Delegates:* William E. Nuesse, M.D., Rockland, Secretary  
Thomas W. Williams, M.D., Rockland  
Onni C. Kangas, M.D., Rockland

#### *Alternate*

Mustafa V. Onat, M.D., St. George

#### Lincoln-Sagadahoc County Medical Society

*Delegates:* George W. Bostwick, M.D., Newcastle, Secretary  
Nelson P. Blackburn, M.D., Bath  
Mary J. Tracy, M.D., Damariscotta

#### *Alternates*

Alfred T. Holt, M.D., Bath  
Richard C. Leck, M.D., Bath

### FOURTH DISTRICT

#### Kennebec County Medical Association

*Delegates:* Francis A. Spellman, M.D., Togus, Secretary

Richard E. Barron, M.D., Winthrop  
Richard T. Chamberlin, M.D., Waterville  
Earle M. Davis, M.D., Waterville  
George I. Gould, M.D., Richmond  
Samson Fisher, M.D., Waterville  
Valentine J. Moore, M.D., Waterville

#### *Alternates*

Raymond E. Culver, M.D., Waterville  
Brinton T. Darlington, M.D., Augusta  
John D. Denison, M.D., Augusta  
Albert A. Poulin, M.D., Waterville  
Terrance J. Sheehan, M.D., Augusta  
John H. Shaw, M.D., Augusta

#### Somerset County Medical Society

*Delegates:* John H. Steeves, M.D., Skowhegan, Secretary  
H. Carl Amrein, M.D., Madison  
Harland G. Turner, M.D., Norridgewock

#### *Alternates*

Vincente L. Sy, M.D., Bingham  
Henry H. Richards, M.D., Jackman

#### Waldo County Medical Society

*Delegates:* Euclid M. Hanbury, Jr., M.D., Belfast, Secretary  
George L. Temple, M.D., Belfast

#### *Alternate*

Robert C. Lecher, M.D., Belfast

### FIFTH DISTRICT

#### Hancock County Medical Society

*Delegates:* Bradley E. Brownlow, M.D., Blue Hill, Secretary  
Eliot T. Stadler, M.D., West Gouldsboro  
Winston G. Stewart, M.D., Bar Harbor

#### *Alternates*

John C. Van Pelt, M.D., Ellsworth  
George G. Fuller, M.D., Ellsworth

#### Washington County Medical Society

*Delegates:* Karl V. Larson, M.D., East Machias, Secretary  
Donald M. Robertson, M.D., Milbridge

#### *Alternate*

Robert G. MacBride, M.D., Lubec

### SIXTH DISTRICT

#### Aroostook County Medical Society

*Delegates:* George J. Harrison, M.D., Houlton, Secretary  
Melvin R. Aungst, M.D., Fort Kent  
Eugene G. Gormley, M.D., Houlton  
Arthur K. Carton, M.D., Houlton



*Alternates*

William A. O'Brien, M.D., Presque Isle  
 Rodrigue J. Albert, M.D., Fort Kent  
 Eric F. Nicholas, M.D., Mars Hill

**Penobscot County Medical Association**

*Delegates:* Lewis E. Phillips, M.D., Bangor, Secretary  
 Herbert C. Gilman, M.D., Millinocket  
 John S. Houlihan, M.D., Bangor  
 Thornton W. Merriam, Jr., M.D., Bangor  
 Leonard G. Miragliuolo, M.D., Bangor  
 John J. Pearson, M.D., Old Town

*Alternates*

Wilfred I. Butterfield, M.D., Lincoln  
 George O. Chase, M.D., Bangor  
 Sidney Chason, M.D., Bangor  
 James H. Crowe, M.D., Bangor  
 Gerald A. Metz, M.D., Bangor

**Piscataquis County Medical Society**

*Delegates:* Isaac Nelson, M.D., Greenville, Secretary  
 Charles H. Lightbody, M.D., Guilford  
*Alternate*  
 John B. Curtis, M.D., Milo

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## *"Medicine Avenue"*

### Technical Exhibits

Abbott Laboratories, North Chicago, Illinois

The Alkalol Company, Taunton, Massachusetts  
 Representative: Mr. Edward W. LeClair

Associated Hospital Service of Maine, 509 Forest Ave., Portland, Maine  
 Representatives: Mr. Thomas W. Cathcart and Mr. Jerry Merrill

Boston Medical Laboratory Inc., 19 Bay State Rd., Boston, Massachusetts  
 Representative: Mr. Jack Hubbard

Elmer N. Blackwell, Surgical Appliance Specialist, 565 Congress St., Room 207, Portland, Maine

Bristol Laboratories, P. O. Box 657, Syracuse, New York  
 Representatives: Mr. Dick Green, Mr. Bob Wood and Mr. Bob Pogorelc

Burroughs Wellcome & Co. (U.S.A.) Inc., 3030 Cornwallis Rd., Research Triangle Park, North Carolina

Coca-Cola USA, Suite 12, 180 East State St., Westport, Connecticut

Crowley & Gardner/Surgeons & Physicians, Inc., 15 Stuart St., Boston, Massachusetts

Lakeside Laboratories, Inc., Milwaukee, Wisconsin

Lederle Laboratories, Pearl River, New York

Mallard Inc., 3021 Wabash Ave., Detroit, Michigan  
 Representative: Mr. Roland Stickney

Mead Johnson Laboratories, 2404 Pennsylvania St., Evansville, Indiana  
 Representatives: Mr. Remi St. Onge, Mr. Guy F. Hunter and Mr. Paul T. Branon

Medical Oxygen Service, Inc., Belfast, Maine  
 Representatives: Mr. Philip R. Black, Mr. William J. Leombruno and Mr. Kenneth R. Timmons

Merck Sharp & Dohme, West Point, Pennsylvania  
 Representatives: Mr. William Haskell and Mr. Harold Glueck

Parke, Davis & Company, Detroit, Michigan

A. H. Robins Company, 1407 Cummings Dr., Richmond, Virginia  
 Representative: Mr. Hubert W. Strom

Ross Laboratories, Columbus, Ohio

Sandoz Pharmaceuticals, Hanover, New Jersey

Schering Corporation, Union, New Jersey

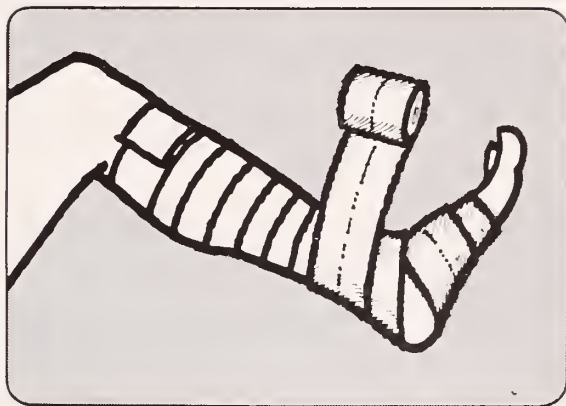
G. D. Searle & Company, P. O. Box 5110, Chicago, Illinois

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**CONTRAINDICATIONS:** Hypersensitivity to antihistamines of the same chemical class. Dimetapp Extentabs are contraindicated during pregnancy and in children under 12 years of age. Because of its drying and thickening effect on the lower respiratory secretions, Dimetapp is not recommended in the treatment of bronchial asthma. Also, Dimetapp Extentabs are contraindicated in concurrent MAO inhibitor therapy.

**WARNINGS:** *Use in children:* In infants and children particularly, antihistamines in overdose may produce convulsions and death.

**PRECAUTIONS:** Administer with care to patients with cardiac or peripheral vascular diseases or hypertension. Until the patient's response has been determined, he should be cautioned against engaging in operations requiring alertness such as driving an automobile, operating machinery, etc. Patients receiving antihistamines should be warned against possible additive effects with CNS depressants such as alcohol, hypnotics, sedatives, tranquilizers, etc.

**ADVERSE REACTIONS:** Adverse reactions to Dimetapp Extentabs may include hypersensitivity reactions such as rash, urticaria, leukopenia, agranulocytosis and thrombocytopenia; drowsiness, lassitude, giddiness, dryness of the mucous membranes, tightness of the chest, thickening of bronchial secretions, urinary frequency and dysuria, palpitation, hypotension/hypertension, headache, faintness, dizziness, tinnitus, incoordination, visual disturbances, mydriasis, CNS-depressant and (less often) stimulant effect, anorexia, nausea, vomiting, diarrhea, constipation, and epigastric distress.

**HOW SUPPLIED:** Light blue Extentabs in bottles of 100 and 500.

## A practical, ambulatory treatment for leg ulceration

**The Flexible Cast:** The PRIMER medicated bandage, in conjunction with the FLEXOPLAST elastic adhesive bandage, comprise the cast.

This is a more comfortable and faster method of healing than Unna's Boot. Frequent changing of the dressing is eliminated. The newly forming granulation and epithelium are left undisturbed. It is the modern form of treatment.

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# AMERICAN CANCER SOCIETY-MAINE DIVISION, INC.

Brunswick, Maine



## Reach to Recovery Program in Maine

The Maine Division of the American Cancer Society is now prepared to provide meaningful help to the woman who must undergo breast removal in cancer treatment.

In accordance with the Society's Reach to Recovery Program, there are trained volunteers ready to make bedside visits at the time of the breast cancer patient's great psychological need. Each volunteer is a former breast cancer patient who has returned to her normal life after surgery.

The Reach to Recovery volunteer will give practical advice on the exercises necessary for physical rehabilitation and on brassiere comfort and clothing adjustment. Visits will be made only with full consent of the attending physician, and patients' names will be kept confidential.

The volunteer has information for the family of the breast cancer patient as well. The attitude of those closest to her is crucial to the well being of the breast cancer patient.

The Reach to Recovery Program got its start in New York City 17 years ago. At that time, Mrs. Terese Lasser, a breast cancer patient, was challenged by her surgeon to do something to help other women. Mrs. Lasser is now a national consultant to the Society.

Reach to Recovery takes its name from the exercises which help a breast cancer patient towards physical rehabilitation. The volunteer presents the patient with exercise equipment, a manual of information and a temporary prosthesis for her to wear when leaving the hospital.

When the woman's physician gives his approval, the American Cancer Society volunteer will be of aid in fitting a regular prosthesis. No products will ever be sold or endorsed by the Reach to Recovery Program.

Another very important part of the Reach to Recovery Program is the education of personnel responsible for the comfort of the radical mastectomy patient. This takes the form of lectures and demonstrations to interested medical and hospital personnel. These lectures include creation of an awareness of the patient's reaction to her operation, demonstration of exercises, and display and discussion of various prostheses.

The program in Maine seems to be taking hold with several hospitals and physicians endorsing the program and its volunteers.

Any information regarding Reach to Recovery may be obtained through the Maine Division office in Brunswick.



## Necrologies

RAY L. WHITNEY, M.D.

1878-1971

Dr. Ray L. Whitney, 92, retired assistant superintendent of the McLean Hospital in Belmont, Massachusetts and a resident of Cape Porpoise, Maine for 24 years died in Penacook, New Hampshire on February 25.

He was born in Winchendon, Massachusetts on March 29, 1878, son of Albert R. and Bettridge P. Whitney.

Dr. Whitney was graduated from Murdock High School in Winchendon in 1896, Brown University in 1900 and received his medical degree from Harvard Medical School in 1904. He practiced from 1907 to 1914 as assistant superintendent of the Worcester State Hospital in Massachusetts, was assistant head physician at McLean Hospital from 1914 to 1920, and then became superintendent of Cromwell Hall in Connecticut. He returned to McLean Hospital in 1925 as assistant superintendent and stayed there until his retirement in 1947, when he moved

to Cape Porpoise. Dr. Whitney also had a private practice with offices on Beacon Hill, Boston, and continued his practice at his home in Cape Porpoise.

He was a member of the York County Medical Society, the Maine Medical Association, the Connecticut Medical Association, the Massachusetts Medical Association and the American Psychiatric Association. He also served as assistant medical advisor to the Massachusetts Department of Hygiene and consultant to the medical advisory board of the Boston draft board in both World Wars, and during his retirement, served on the staff of the Veterans Administration Center in Togus.

In 1969, Dr. Whitney was honored by the Maine Medical Association for his 65 years in the practice of medicine.

Surviving are his brother, Stearns H. Whitney of Bow, New Hampshire and several nieces and nephews.

FRANCIS J. KADI, M.D.

1902-1971

Dr. Francis J. Kadi, 68, of Bangor, Maine, former superintendent of the Bangor State Hospital, died at a Bangor hospital on March 7.

Dr. Kadi was born on October 15, 1902 in Papa, Hungary, son of Steven and Teresa F. Kadi.

He was graduated from the University of Budapest and received his medical degree from the University of Rome, Italy in 1931. Dr. Kadi served a rotating internship in both Italy and Hungary. This was followed by a one-year residency in internal medicine in Hungary, and a three and a half year psychiatric residency, also in Hungary. He completed a three-year orthopedic surgical residency and received a certificate from the Eastern Dispensary and Casualty Hospital, Washington, D.C. in 1944. He then did a tuberculosis residency at St. Anthony Hospital, Wood Haven, New York for two and a half years.

Dr. Kadi came to Maine as assistant superintendent of the Western Maine Sanatorium in Hebron, a position which he held until 1955, when he was appointed superintendent. He remained there until June 1958 when he joined the staff of the Bangor State Hospital as assistant superintendent and clinical

director. He became superintendent in November 1967 following the death of Dr. Harold Pooler. He served there until the latter part of December 1970, when Harry Eliazadian was appointed to succeed him. Since that time, Dr. Kadi continued to carry out programs for the betterment and care of the patients of Bangor State Hospital as head of the medical staff.

He was a member of the Penobscot County Medical Association, the Maine Medical Association, the American Medical Association, the American Thoracic Society, the Maine Radiological Society, the Maine Psychiatric Society and the Bangor Medical Club. He was also very active with the Maine T. B. and Health Association and the Academy of Religion and Mental Health.

Surviving are his wife, Freda L. Kadi; a daughter, Miss Teresa I. Kadi of Augusta; a son, Francis X. Kadi of Pownal; two brothers, Steven Kadi of Phillipsburg, New Jersey and Joseph Kadi of Flushing, New York; two sisters, Mrs. John Marhan and Mrs. Victory Orban, both of Long Island City, New York; and several nieces and nephews.

LANGDON T. THAXTER, M.D.

1889-1971

Dr. Langdon T. Thaxter, 81, of Cumberland Foreside, Maine, who had been vacationing in the South with Mrs. Thaxter, died unexpectedly in a hospital in Beaufort, South Carolina on March 13.

He was born in Portland, Maine on June 12, 1889, son of Sidney Warren and Julia T. Thaxter.

Dr. Thaxter was graduated from Williams College in 1912 and received his medical degree from Harvard Medical School

in 1915. Dr. Thaxter started practice in Portland as an orthopedic surgeon but in the late 1920's pursued the study of x-ray technology with Dr. George Holmes at the Massachusetts General Hospital. He then returned to Portland to become chief of the Department of Radiology at the Maine General Hospital, now the Maine Medical Center, and served in that capacity until his retirement in 1954.

During World War I, Dr. Thaxter joined a group of other

Maine General Hospital physicians to form a Maine Unit of the Army Medical Corps which served in England. He was first stationed at a hospital in Oxford, and later worked in the British War Office. He was promoted to Major in 1925.

Dr. Thaxter was an honorary member of the Cumberland County Medical Society and the Maine Medical Association, having received a 50-year pin in 1965 and a 55-year pin in 1970. He was also a member of the American Medical Association,

the New England Roentgen Ray Society, the Maine Radiological Society and was a diplomate of the American College of Radiologists and a charter member and former president of the Radiological Society of North America.

Surviving are his wife, the former Priscilla Kimball; a daughter, Mrs. James Ingwersen of San Mateo, California; a son, Langdon Kimball Thaxter of Portland; three grandchildren and several nieces and nephews.

## In Memoriam

### *Androscoggin County*

Horace L. Gauvreau, M.D. Lewiston

### *Aroostook County*

Francis J. Faucher, M.D. Grand Isle

### *Cumberland County*

Robert A. Bearor, M.D. Portland

Frank S. Broggi, M.D. Portland

Langdon T. Thaxter, M.D. Cumberland Foreside

### *Hancock County*

Marcus A. Torrey, M.D. Ellsworth

### *Kennebec County*

Peter F. Lansing, M.D. Augusta

### *Lincoln-Sagadahoc County*

Harry M. Wilson, M.D. Bath

### *Oxford County*

Nathanial Mills, M.D. Wolfeboro, N.H.

### *Penobscot County*

Allan Craig, M.D. Pacific Grove, Calif.

Francis J. Kadi, M.D. Bangor

John E. Whitworth, M.D. Bangor

### *York County*

Louis C. Lesieur, M.D. Saco

Marcel D. Ouellette, M.D. Sanford

Ray L. Whitney, M.D. Cape Porpoise

Eugene P. Wolfahrt, M.D. Saco

## County Society Notes

### 100% Paid Membership for 1971 Piscataquis County Medical Society

#### PENOBSCOT

A regular meeting of the Penobscot County Medical Society was held at the Tarratine Club in Bangor, Maine on January 19, 1971, with the President, Dr. Charles D. McEvoy, Jr., presiding. There were 47 members and guests, including Dr. Linus J. Stritham, President-elect of the Maine Medical Association, present.

The guest speaker, Dr. Richard P. Laney, Chairman of the State Peer Review Committee, presented a pertinent, timely discussion on Peer Review.

The minutes of the previous meeting were approved as read.

The annual treasurer's report dated December 15, 1970 by the previous treasurer, Dr. Ronald R. Striar was presented by Dr. Philip R. Kimball and accepted.

Dr. Thornton W. Merriam, Jr. reported for the Insurance Committee regarding his meeting on November 18, 1970 regarding Blue Cross-Blue Shield policies.

- a. A revision is being made regarding payments in light of inflation.
- b. Data phone consultation charges are being reviewed.
- c. The V.A. Hospital announced increased payment for routine office calls from \$5.00 to \$7.00 per visit.
- d. A charge for laparoscopy is to be determined.
- e. Questions regarding insurance practices are requested to be brought to the attention of the insurance committee.
- f. A further report is to be forthcoming regarding major medical coverage.

Recommendations of the Ad Hoc Committee on amendments to Constitution and Bylaws, Chapter II, Section 2 — (to read as follows) — the annual meeting of the Society will be held in May, at which time officers and councilors will be elected. They will assume office July 1 of the year in which they are elected. Having been previously discussed, the recommended amendment was approved by the Society.

#### New Business:

- a. A motion by Dr. George W. Wood, III was made and passed that the County Medical Society appoint a peer review committee.
- b. The recent state legislative committees' recommendation regarding abortion was discussed. Some concurred with this report with others feeling that the recommendations were still inadequate and did not provide an adequate solution to many of the problems involved. Dr. Gerald A. Metz moved that this County Society disapprove of the above recommendations. This motion was tabled.

A regular meeting of the Penobscot County Medical Society was held on February 16, 1971 at Baldacci's Restaurant in Bangor, Maine with the President, Dr. Charles D. McEvoy, Jr., presiding. Approximately forty-five members and guests were present.

Guest speaker, Mr. William Carney of the Department of Health and Welfare spoke of a need for regional health planning — regional hospital planning. He related some "haphazard planning" such as that in Lewiston with two cobalt units, and tentative plans for a new thirty-seven acute bed unit in Gardiner, only six miles from Augusta. He felt that collective cooperative planning rather than that on an individual basis was needed.

The minutes of the previous meeting were read and approved with an addition amended.

Further recommendations by the Ad Hoc Committee on

### COUNTY SOCIETY OFFICERS

#### ANDROSCOGGIN

President, Charles W. Steele, M.D., Lewiston  
Secretary, Donald L. Anderson, M.D., Lewiston

#### AROOSTOOK

President, I. Mead Hayward, M.D., Caribou  
Secretary, George J. Harrison, M.D., Houlton

#### CUMBERLAND

President, Lawrence Crane, M.D., Portland  
Secretary, Douglas R. Hill, M.D., South Portland

#### FRANKLIN

President, Wallace H. Duffy, M.D., Farmington  
Secretary, Hays G. Bowne, M.D., Farmington

#### HANCOCK

President, John G. Murray, Jr., M.D., Blue Hill  
Secretary, Bradley E. Brownlow, M.D., Blue Hill

#### KENNEBEC

President, Paul A. Jones, Jr., M.D., Waterville  
Secretary, Francis A. Spellman, M.D., Togus

#### KNOX

President, Henry O. White, M.D., Rockland  
Secretary, William E. Nuesse, M.D., Rockland

#### LINCOLN-SAGADAHO

President, Frank O. Avantaggio, Jr., M.D., Damariscotta  
Secretary, George W. Bostwick, M.D., Newcastle

#### OXFORD

President, Peter B. Aucoin, M.D., Rumford  
Secretary, Stephen B. Dewing, M.D., Harrison

#### PENOBSCOT

President, Charles D. McEvoy, Jr., M.D., Bangor  
Secretary, Lewis E. Phillips, M.D., Bangor

#### PISCATAQUIS

President, Robert C. Cornell, M.D., Greenville  
Secretary, Isaac Nelson, M.D., Greenville

#### SOMERSET

President, Vincente L. Sy, M.D., Bingham  
Secretary, John H. Steeves, M.D., Skowhegan

#### WALDO

President, Norman E. Cobb, M.D., Belfast  
Secretary, Euclid M. Hanbury, Jr., M.D., Belfast

#### WASHINGTON

President, George B. Shaw, M.D., Machias  
Secretary, Karl V. Larson, M.D., East Machias

#### YORK

President, Harry B. Eisberg, M.D., Biddeford  
Secretary, Charles W. Kinghorn, M.D., Kittery  
Asst. Secretary, Melvin Bacon, M.D., Sanford



amendments, constitution and bylaws were presented to the Society as follows and were accepted as amendment changes:

#### CONSTITUTION

Article IV, Section 1. The officers of this (Delete) association (Add) society . . . (remainder the same).

Article V. (Delete) The meetings of the association shall be held at the call of the president at such times and places as are decided by the Executive Council. (Add) Regular meetings of the society will be held as prescribed in Chapter II of the bylaws. Special meetings of the society may be held at the call of the president. He shall call a special meeting at the written request of three members of the Executive Council or at the written request of ten active members of the society.

#### BYLAWS

Chapter I, Section 2. . . . Junior members shall have all the rights and privileges of active members except the right to (Delete) "vote and" hold office.

Section 6. . . . The recommendations of the Executive Council (Delete) will be submitted to the membership at a business meeting of the society. Election will be by majority vote of the members present. (Add) shall be submitted to the membership of the next business meeting of the society. Election shall be by secret ballot and by a majority vote of the members present.

Chapter III, Section 2. (Delete) Neither the president nor any councilor who has completed more than 50% of a full term may succeed himself in office.

Chapter VI, Section 1. Delegates and alternates to the Maine Medical Association shall be (Delete) chosen annually by the Executive Council in conformity with Chapter III, Section 4 of the bylaws of the Maine Medical Association. (Add) Nominated by the Executive Council in conformity with the bylaws of the Maine Medical Association. Additional nominations may be made from the floor at the annual meeting of the Society. They shall be elected at the annual meeting and will serve twelve months beginning in July of the year in which elected.

#### *Standing Committees and Announcements:*

A summary of the diabetic committee report was presented by Dr. Lewis E. Phillips.

A communication from Carleton Gunn, directing minister of Bangor-Brewer Mobile Ministry, was read in summary to the Society regarding the Maine State statutes regarding privileged communications.

#### *Old Business:*

The following applications to membership were considered and approved by the Society:

Dr. John Archambault, proposed by Drs. Francis J. Kadi and Robert J. Barrett, Jr. — transferred from Androscoggin County. Dr. Andre Merciano de Freitas, proposed by Drs. Joseph S. Brito and Francis J. Kadi.

Dr. Metz's previously tabled motion regarding disapproval of the recent State Legislative committee's recommendation on abortion was opened to the floor. Dr. Metz amended his motion to propose the following resolution be endorsed by this Society and notification of the endorsement be made available to the appropriate committees of the legislature of this State: "The Penobscot County Medical Society, recognizing the medical problems caused by criminal abortion and the social and psychological problems caused by the birth of unwanted children, recommends that the legislature of the State of Maine enact a law that will make available to the women of the State medically competent abortion. It is requested by this Society that the new law be in accord with recommendations of the American Medical Association, permitting abortion to be a matter of individual conscience between the patient and her doctors, without infringement by the law on the free practice of medicine. It is recognized that the right of the individual doctor not to perform an abortion if it is against his medical judgment or personal belief shall be protected. The Society is on record opposing restrictive abortion legislation of the type which limits abortion to the cases of rape, incest, or fetal deformity, or when

necessary to preserve the life and physical or mental health of the patient."

Dr. David M. Sensenig motioned that the amendment to the motion be submitted to a written mailed ballot requesting a reply before the next meeting. This was passed. Also it was concluded that the present recommendations of the A.M.A. and M.M.A. legislative committee report be forwarded for informational purposes.

LEWIS E. PHILLIPS, M.D., *Secretary*

#### KENNEBEC

The Kennebec County Medical Association met at the Augusta State Hospital in Augusta, Maine on February 18, 1971. A delicious dinner was served to twenty-eight members, following which the business meeting was conducted by the President, Dr. Paul A. Jones, Jr.

The minutes of the last meeting and the Treasurer's report for 1970 were read and accepted. A discussion period was then held during which the summary of the Special Meeting of the M.M.A. House of Delegates, December 1970, was reviewed by Dr. Richard T. Chamberlin, acting as spokesman for our delegates. There was considerable debate in regard to legislation bearing on the interruption of pregnancy, as a result of which a written poll was taken. Twenty-six ballots were cast expressing the following opinions in reference to abortion legislation:

<i>Leave law as is</i>	<i>Colorado Type Law</i>	<i>N.Y. State or Doyle Type Law</i>	<i>No abortion at all</i>
3	6	15	0

One member voted "yes," and one member voted "no stand at this time." The members present unanimously voted to have the results of this poll sent to the Executive Secretary of the M.M.A., the Chairman of the Legislative Committee of the M.M.A., and the Chairman of the Judiciary Committee of the Maine State Legislature.

Dr. Chamberlin agreed to draw up a list of questions in reference to pending House of Delegates' matters to be submitted by mail to our Association prior to our March meeting. It is hoped that from the answers our County delegates may better represent our membership at future M.M.A. House of Delegates' meetings. There was some expression of opinion that our County Association should devote *more* meetings to thorough discussion of pending medical legislation rather than to purely scientific programs.

The evening speaker was Dr. Alan M. Elkins, Director, Psychiatric Service, Maine Medical Center, who gave a discerning and enjoyable review of existing Community Mental Health Services in Maine.

The meeting was adjourned by Dr. Jones at 9:30 p.m.

FRANCIS A. SPELLMAN, M.D., *Secretary*

#### CUMBERLAND

The 358th meeting of the Cumberland County Medical Society was held at the Holiday Inn in Portland, Maine on February 18, 1971. After a pleasant social hour, the Society enjoyed a fine Roast Beef dinner.

There were 57 members and guests in attendance. Our guests included Dr. Robert F. Ficker, District 1 Representative and a panel of pharmacists who presented the program of the evening. The pharmacists included Mr. Al Tancredi, President of the Southern Maine Pharmaceutical Association, Mr. John Gill, Mr. John Burrill, Mr. Roy St. Clair, Mr. John Doran and Mr. Patrick Demers.

The business meeting was called to order by the President, Dr. Lawrence Crane at 8:15 p.m. It was moved, seconded, and voted to dispense with the reading of the minutes of the previous meeting.

The interim meeting of the Maine Medical Association House of Delegates to be held in West Bath, April 4, 1971, was announced.

The reading of applications for membership was the next

order of business. Read for the second time were the applications of Drs. Hugh Johnston and Ernest Keen. It was moved, seconded, and voted that they be accepted, their papers being in order. The applications of two other candidates was considered. The application of Dr. Wesley J. English was accompanied by a letter from the Secretary-Treasurer of the Hancock County Medical Society and it was moved, seconded, and voted that Dr. English be received into the Cumberland County Medical Society by letter of transfer. The application of Dr. Donald H. Brown was reviewed, Dr. Brown's application was accompanied by a letter from the Athens, Ohio Medical Society; and it was moved, seconded, and voted that Dr. Brown be accepted into Junior Membership in the Cumberland County Medical Society.

No committee reports were received although the work of the Medical-Legal Liaison Committee was reviewed. The meeting between the medical representatives, the Hartford Insurance group, and our new legal representative, Mr. Larry Mahoney, held on February 11, 1971, was reviewed and the promise that it held was brought to the attention of the members of the Society.

The Nominating Committee, chaired by Dr. Charles W. Capron, presented the names of two delegates and one alternate to bring our list of delegates and alternates up to full strength. The delegates were Drs. Philip G. Whitney and Robert P. Timothy; Dr. Timothy to complete the term of Dr. Houghton M. White. The alternate was Dr. Frederick B. Clark.

Dr. Ronald J. Carroll presented a talk on his thoughts with regard to the abortion issue. At the end of his prepared remarks, he presented three resolutions to the Cumberland County Medical Society:

1. Be it resolved that the Cumberland County Society recommend to the Maine Medical Association that any Legislative Bill sponsored or endorsed by the Maine Medical Association in 105th Legislative session bearing on the issue of abortion, include the acknowledgement that human conception constitutes the beginning of human life for an individual whose biologic identity from conception onward is clearly separable from that of the mother.

2. Be it further resolved that the Cumberland County Society recommend that the Maine Medical Association actively seek to educate the Legislature and the public on the basic biologic chemistry and genetics of biologic reproduction, so that Legislature emanating from the Maine Legislature might be based on valid biologic principles.

3. Be it resolved that the Cumberland County Medical Society record itself in favor of official involvement of our State and County organizations in the public education of our youth in matters of reproductive physiology.

It was moved that the consideration of these resolutions be tabled until such time that the Society was better able to speak to them. It was seconded and voted that the resolutions be tabled. President Crane suggested that at the next meeting these and other legal matters pertaining to the medical society be the subject of a program. Implementation of this idea will be carried out.

Dr. Crane then introduced Mr. Al Tancredi, who spoke to the Society with regard to the problems that exist between physicians and pharmacists in relation to prescriptions, writing of prescriptions, and third-party payment of prescriptions. He pointed out some interesting information that we all need to keep in mind with regard to the writing of Class A narcotic prescriptions. Reasons for the Maine Medical Center's reticence to identify its House Officers to the pharmacists so that they may readily know their names and signatures were discussed. Some effort will be made to correct this situation. Mr. Tancredi also suggested that a general information fact sheet might be helpful for pharmacists and asked that the Society consider having its physicians make these completed forms available to pharmacists in their areas. The program by the pharmacists was well received and many interesting questions developed.

Following the presentation of this program, the meeting was adjourned at 9:45 p.m.

The 359th meeting of the Cumberland County Medical Society was held at Valle's Steak House in Portland, Maine on March 18, 1971. A pleasant social hour was followed by a dinner of Roast Sirloin of Beef. There were eighty-one members and guests in attendance.

The meeting was called to order by the President, Dr. Lawrence Crane at 8:15 p.m. It was moved, seconded, and voted to dispense with the reading of the minutes of the previous meeting.

There were two matters of correspondence. It was voted by the Cumberland County Medical Society to forward to the Maine Chapter of American Association of Medical Assistants a check for \$100.00 to cover costs associated with their management of the Medical Assistants' Registry. It was felt by the doctors that this was serving a useful purpose. Some correspondence regarding Dr. George Sirodot was answered by Dr. Charles E. Skillin.

The application of Dr. Carl Jackson for membership in the Cumberland County Medical Society was read for the first time. It will be read again at our next meeting. Dr. Crane then read a list of committee appointments of the Cumberland County Medical Society.

The next order of business was the program. Mr. Harrison Richardson, whose firm represents the Maine Medical Association as its active lobbyist, along with a panel consisting of Dr. Domenico A. Santoro and Dr. Lloyd G. Davies, discussed some of the pending legislation before the State governing bodies that had medical implications. Mr. Richardson in particular discussed the chiropractor bills and the proposed abortion bills. Dr. Santoro commented on the legislative procedure and Dr. Davies spoke with regard to the State Legislative Committee's function. The program stirred some lively questions and discussion.

The resolutions as presented by Dr. Ronald J. Carroll to the Cumberland County Medical Society at its February meeting were read to the Society. A motion was made by Dr. Cummings to limit debate on these resolutions. This motion was defeated 27-18. A rather thorough discussion of the resolutions then followed. The resolutions were then brought to a vote, the three resolutions being voted on simultaneously. The vote was 34 against presenting the resolutions, 21 for, 4 abstaining from voting.

Dr. George F. Sager then reported on the work of his committee at the level of the State reorganization. Some of the changes that are coming are:

1. There will be 9 councilors-at-large with no district representation. However, no more than two councilors may come from any one Society or district.
2. A nominating committee is to propose a slate of two candidates for each position.
3. The House of Delegates will have three meetings per year instead of two.
4. There will be some possible rearrangement of the components of each Society in a geographic relationship.
5. Committee structures are to be changed so that there will be groupings of committees rather than a great number of unrelated committees.

Dr. Sager's report was accepted by the Society.

Dr. Crane then adjourned the meeting.

DOUGLAS R. HILL, M.D., *Secretary*

#### HANCOCK

The 432nd meeting of the Hancock County Medical Society was held on March 10, 1971 at Jasper's Restaurant in Ellsworth, Maine, with eleven members and eight guests present.

Dr. George E. Files of Bangor gave an address on the nature of the prostate and its disorders, which was concise and



interesting, followed by a brief discussion period.

Dr. Eliot T. Stadler proposed two resolutions: (1) to discourage "free and arbitrary switching of primary physician and endorsing the concept that each individual should have a primary physician who sees all individuals medical problems" — defeated, (2) that the American Medical Association endorse as its policy to discourage the drug industry from carrying on unsolicited promotional activities particularly salesmen's visits and mailings of brochures and samples — carried.

After an excellent presentation by Dr. Euclid M. Hanbury, Jr. of the proposal of the Peer Review Committee of the Maine Medical Association, a motion was made to support Peer Review at the Interim House of Delegates meeting on April 4. This was seconded and carried. Meeting adjourned at 10:00 p.m.

BRADLEY E. BROWNLOW, M.D., *Secretary*

## YORK

A meeting of the York County Medical Society was held on March 17, 1971 at the Goodall Hospital in Sanford, Maine. It consisted of a social hour from 6:30 p.m. to 7:30 p.m., dinner at 7:30 p.m., and a business meeting followed.

There was a very interesting program. It consisted of a film on "Depression" and was followed by a short talk by Dr. Willem F. Nieuwkerk of Kennebunkport. Mr. Harry J. Eordekian of Lakeside Laboratories also made a few comments. In addition, Mr. Joseph Himmelstein of Boston spoke on a program of financial planning for physicians.

The meeting was presided over by Dr. Harry B. Eisberg, President of the York County Medical Society. He announced the next meeting would be held at the Webber Hospital, Biddeford on May 12th. It will be an evening meeting. Business of the May meeting will be devoted wholly to affairs of the State and County Societies. The committee in charge of arrangements for this meeting is Drs. Thomas Anton, Conner M. Moore and Owen Dow, all of Biddeford and Saco.

Appointments of various committees were announced by the President. These include:

Resolutions Committee: Drs. William O. Buell, Biddeford, Gerald R. Smith, Ogunquit and Donald E. Troop, Springvale

Auditing Committee: Drs. Melvin Bacon, Sanford and Conner M. Moore, Saco

Medical Procurement Committee: Drs. Ruth E. Endicott, Ogunquit, Marcel P. Houle, Biddeford and Armand S. Lincourt, Sanford

A delicious dinner was served. There were approximately 20 members and guests present.

The committee in charge of this meeting was Drs. Carl E. Richards and Melvin Bacon.

CHARLES W. KINGHORN, M.D., *Secretary*

## LINCOLN-SAGADAHOC

A regular meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on March 16, 1971.

The meeting was called to order at 8:45 p.m. by the President, Dr. Frank O. Avantaggio, Jr. The minutes of the last meeting were accepted as read.

Dr. Nelson P. Blackburn announced that the Interim Session of the House of Delegates of the M.M.A. will be held in two and a half weeks and asked for any instructions to delegates. Dr. Paul A. Fichtner discussed redistricting, medical foundations, and peer review. The principle of Sectionalism was mooted by the general membership.

Dr. Bostwick read a list of the standing and special committees for M.M.A. and Dr. Avantaggio asked that those interested in serving leave their names with Dr. Bostwick.

Dr. Henry A. Hudson then introduced Dr. James C. Wren of Togus who spoke on atherosclerosis in general practice.

GEORGE W. BOSTWICK, M.D., *Secretary*

## REPORT OF THE PRESIDENT

*Continued from Page 108*

environmental agencies. I believe these panel discussions would provide everybody with a better understanding of the multiple problems which the delivery of health care entails. In closing, I wish to extend my thanks to the hospital, Board, Administration and the various members of our Staff Committees who have worked so diligently during the past year for the benefit of Mercy Hospital.

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# The Journal of the Maine Medical Association

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## Physician's Assistant — Second Level Entrepreneur?

JOHN C. BJORN, M.D.

Physician's Assistants (P.A.'s) are now being trained in many different programs.<sup>1</sup> It is expected that their skills in the health care system will enable the patient to make more effective use of physicians' time and assure more effective health care. Will these expectations be met? Since the duties of P.A.'s have not been clearly defined and since the medical profession has yet to define what quality comprehensive care means, we cannot perform an effective audit to answer the question.

The private practitioner is free to set his own standards of practice. Except for hospitalized patients and the grossest of bad judgments in ambulatory care, he is his own auditor. There is no way in such a setting to effectively evaluate the role of P.A.'s in the provision of quality health care. They cannot possibly work toward standards of quality which have not yet been defined.

If a system is to be constructed which will make optimal use of P.A.'s at least three prerequisites must be met:

1. The approach to health care must be so rigorously structured that an on-going audit is not only possible but will be encouraged.
2. The P.A.'s role within the system must be rigorously defined.
3. The above definition must stipulate that the P.A. be prevented from participating in those aspects of the system which require individual judgments.\*

A recently graduated P.A., during a visit to our office, told us that he had been trained to do "routine physical examinations" and "worked up all the new hospital admissions" of his physician-employers. By what standards

of quality? His, or his physician-employers? Certainly his training was different from his employers' and there is every reason to believe that their standards will be different.

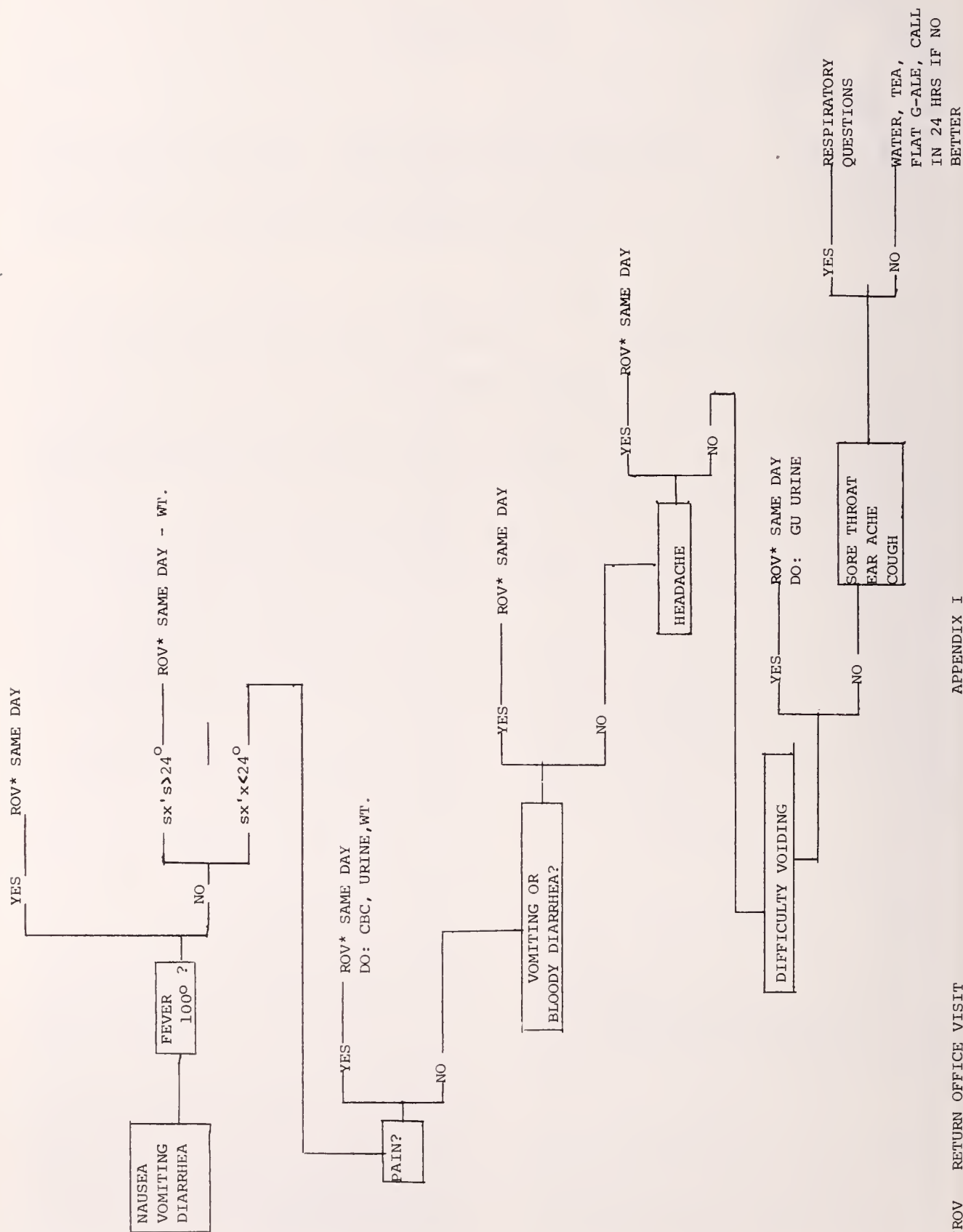
A physician-employer reports with relief that his P.A. has just completed 150 delinquent hospital discharge summaries for him, thereby qualifying him for reinstatement on the staff. A properly completed discharge summary often involves rather complex clustering of data and should include specific plans for follow-up care. This P.A., who had not seen any of the patients, must certainly have had difficulty abstracting these data from the records if they were at all typical physician-constructed documents.

We must first carefully structure the P.A.'s function within our system. Wherever possible, we design this structure around algorithms for specific tasks. An algorithm can be simply defined as a "step-by-step procedure." The word itself is an old word but has been revived in a computer age since computers function through step-by-step procedures. To illustrate, a P.A. might utilize the algorithm shown below, designed by physicians to respond to telephone calls about patients with gastrointestinal problems (Appendix 1). In each of the four phases of health care, algorithms can be developed for handling specific problems. The example cited may not be the best possible approach to the specific problem, but since it is well defined and used consistently, defects will be more readily apparent and can be modified as they are recognized.

There are bound to be unforeseen problems and clusters of problems in practice for which algorithms have not been developed. The P.A. must simply be taught to recognize that he is faced with an exceptional problem and defer management to a physician. If the same problem recurs with sufficient frequency, an appropriate algorithm can be developed.

We have used assistants in the private practice of

\*"Judgment" by definition implies the formation of an opinion or estimate of a particular situation. What we suggest is that the P.A. be prepared to collect data and make certain observations which determine whether these data fall within limits judged by the physician to be acceptable. If they do not, then he may reasonably be expected to proceed with a plan specified by a physician for handling the specific abnormalities.



medicine for the past 12 years and continue to find new roles which they can perform.<sup>2</sup> We believe that an absolute prerequisite to their use is a structured approach to the delivery of health care. Our approach is based on the problem-oriented system as described by Dr. Lawrence L. Weed.<sup>3</sup> The essential components are:

1. A UNIFORM DATA BASE FOR ALL PERSONS WHO ARE TO BE SEEN REGULARLY, DETERMINED ACCORDING TO AGE AND SEX.

Standards relating to data base for acute, self-limited problems are also pre-selected and outlined on acute illness forms. Our assistants do not have to decide what data to collect in each case but merely refer to the standards which have been set and proceed to collect the data. Certain data in such a system, if outside prescribed limits of normal, can lead to their automatically collecting more data. For example, finding a 2-hour postprandial blood sugar over 120 mg% but less than 175 mg% in a person not known to have diabetes directs them to order a glucose tolerance test.

2. A COMPLETE PROBLEM LIST.

Having collected the data previously determined to be indicated for a specific problem, those deviations from normal which are problems to the patient must be listed. This step in the process requires the clustering of various bits of data and physician judgments. Since each of the patient's problems must be specifically evaluated or treated, it is of the utmost importance that the problem list be both accurate and complete. Only after consultation with the physician is the P.A. permitted to add a new problem to the list. In the absence of a complete problem list, there is no way to prevent other physicians and paramedical personnel from treating single problems out of context or from treating spurious deviations from normal which may not be problems at all, such as an abnormal glucose tolerance test in a patient who was fasting for several days before the test was done.

3. FORMULATION OF A PLAN FOR EACH PROBLEM.

It is essential if one is to evaluate the success of a particular course of management that the plan for management be clearly delineated at the outset by the physician. As we begin to utilize P.A.'s in the follow-up phase of health care, it becomes apparent that they must function within well-defined parameters, pre-selected by the physician, and not be permitted to haphazardly alter diagnostic and/or therapeutic programs. We attempt to establish protocols for the long-term management of certain chronic diseases such as diabetes, hypertension, and chronic obstructive pulmonary disease. Each of these begins with a stated goal, is followed by para-

meters to be measured and alterations in the program to be made, based on variations from these parameters. The only decisions which the P.A. must make are those concerned with whether or not the data fall outside the parameters listed. He need not, and should not, decide in any case which parameters should be measured.

Acute, self-limited problems are handled in a similar fashion. The P.A. knows that he is to collect certain "second-order" data based on variations which have been detected in the basic data collected for a certain problem. The algorithm may, for instance, instruct him to measure the peak expiratory flow rate of patients who complain of a cough or to do a throat culture on a patient who complains of a sore throat. We cannot allow him the luxury of deciding which patient with a sore throat needs a culture or which patient with a cough needs measurement of pulmonary function. If we do, we are permitting him to use "clinical judgment" which has been defined as "a decision made in the absence of adequate data."

All of the algorithms which we have constructed are of necessity somewhat arbitrary. Their value, it must be repeated, lies in the knowledge that they are being consistently followed, and if ineffectual, can be modified. Without such a structured approach, each patient with the same problem can be evaluated differently by the physician, as well as the P.A., and from the resultant chaos, a more effective approach can never be achieved.

4. FOLLOW-UP DATA.

Every interaction between the patient and either physician or P.A. must be documented in a progress note which is numbered and titled according to the problem under consideration. It must include the subjective and objective data pertinent to the problem, an interpretation of the progress and a plan for further diagnostic and therapeutic programs, as well as an approach to patient education about the aspect of his problem being considered.

We determined from our protocols what data to collect and what steps were to be taken based on changes in the parameters measured. It is crucial then that the way in which the data were interpreted be documented. Only then do we have a system which can be easily audited to determine the effectiveness of the physician and his protocols and of the P.A. and the manner in which he uses the protocols. We cannot trust the memory of either physician or P.A. for data which has not been recorded. We cannot allow either to record data in random fashion unrelated to specific problems. If we do, there can be no effective audit of either performance.

Much of the objective data collected during the

*Continued on Page 144*



# Medical Aspects of Skiing\*

MERRITT H. STILES, M.D.

## INTRODUCTION

While most health factors related to skiing are orthopedic or surgical, there are a few which might be considered primarily medical. They will be considered under five headings, frostbite, heart attacks, public health, medical contraindications to skiing, and skiing as a therapeutic tool.

## FROSTBITE

Frostbite can be a serious problem, though rarely so for Alpine skiers. Colorado as a state has had a rather high incidence of frostbite; the University of Colorado Medical Center, for example, having had more than 100 admissions in a ten-year period, with almost 100 amputations.<sup>1</sup> Most of the admissions were either alcoholics sleeping it off in a snowbank, or were the results of automobile accidents in the high mountains. There were five mountain climbers who became stranded, and two who were lost on a ski touring expedition. Inadequate clothing in the alcoholic and automobile accident groups was an important factor.

Cold weather studies, in the Antarctic for example, have lead to the belief that the most effective insulation against chilling is a layer of warm air, such as is afforded by Scandinavian fishnet type underwear, with about an inch between weaves, and covered by a closely woven shirt such as cotton twill rather than by loosely woven wool. A light sweater and an impervious parka serve as outer garments. Such a combination provides much more effective protection than does some of the heavy, bulky clothing. Clothing that fits too tightly eliminates this layer of warm air, and shoes that fit too snugly increase the possibility of cold injury.

Protection of the head is also important, with a parka type hood rather than a cap with ear flaps. A nylon pile type of hood is better than fur, which tends to accumulate ice crystals.

It is of interest that observations in Korea demonstrated that persons who grew up in a mountainous or other cold weather environment were less susceptible to cold injury than were Southerners, whether white or black. This observation was duplicated in experimental studies, when rabbits raised in outside hutches in cold weather, with low ambient temperature, proved less susceptible to cold injury than did rabbits raised during warm weather. In the now famous Pro Football Championship game held at Green Bay, Wisconsin in weather well below zero, the incidence cold injury, among the

Dallas squad was several times that of the "boys" from Green Bay. It was not clear whether the increased resistance of cold-reared humans and animals was the result of some type of cellular adaptation, the result of an improved knowledge of how to protect one's self, or the result of some combination of both factors.

From the standpoint of the Alpine skier, the most common cold injury is superficial frostbite, or frostnip as it is often called. This develops principally in the exposed face, the cheeks, chin or tip of the nose. It is not apt to occur unless the temperature falls near the zero Fahrenheit range. The chill factor brought on by rapid air motion, as with fast skiing or wind, increases the likelihood of cold injury. After an initial period of discomfort, often unnoticed, the tissues involved become white and sensation-less. Treatment is simple, warming the frozen area as rapidly as possible. Cupping a hand over the frozen area, or burying a frozen nose tip in a companion's axilla, may be effective emergency treatment. It is probably best, when possible, to go indoors.

The frostnip victim is usually unaware that he has gotten into trouble; it is particularly important not to ski alone in very cold weather since recognition of cold injury by a companion will lead to prompt treatment and avoidance of prolonged freezing with more serious tissue injury. If treatment is prompt, there are usually no after effects other than a little superficial blistering, and possibly a local increased sensitivity to cold for a period of time.

While frostbite of the extremities would seem to be a likely development, it is rarely encountered in Alpine skiing, other than in the devoutly careless or reckless skier who ignores the rules of ski safety and becomes lost for a prolonged period. The discomfort of cold hands and feet, and the interference with effective skiing, will usually send the skier indoors before frostbite has a chance to develop.

The most effective treatment for frostbite is of course prevention. Concentrating on lodge skiing if the temperature is below zero, particularly if there is a strong wind, is completely effective. The avid skier is not apt to stay indoors just because the weather is too cold, however, but he may protect his face by wearing a knitted mask with eyeholes and with an opening for the mouth and nostrils. The leather facial masks recently available presumably eliminate some of the discomforts of the knitted masks, and a vinyl-covered foam rubber thermoshield to cover both the face and neck is available and effective.

Too frequent and too thorough bathing has been considered to increase the likelihood of frostbite, through the removal of protective skin oils. While this is of little consequence in Alpine skiing, it has been suggested that

\*Presented February 1, 1971, Conference on Skiing Injuries, American Academy of Orthopedic Surgeons, Snowmass-at-Aspen, Colorado.

the use of preshave and after shave lotions might increase the risk of facial frostnip, though it should be pointed out that females are not immune. The use of protective facial creams has been suggested, but their usefulness has not been demonstrated.

### HEART ATTACKS

The heart attacks which on rare occasions develop on ski slopes give us another reason to be thankful that our ski slopes are patrolled by the volunteer members of the National Ski Patrol System, or in larger resort-type areas, by professional patrols. Prompt removal by toboggan to the emergency room, and subsequent prompt transfer to a hospital, minimize unfavorable complications. Many ski areas now have physicians available, able to supply emergency treatment even before hospital transfer.

While sudden death has been reported all too frequently in joggers, I have not encountered any report of such a death in a skier, though it seems probable that a few might have occurred. The reasons for the difference in incidence of sudden death in jogging and in skiing are not clear, though a possible factor could be the difference in energy output. In jogging and running energy expenditure is continuous and high, often 75 percent of maximum, or more, leading to exhaustion in a short period of time. In downhill skiing, on the other hand, energy expenditure is at a much lower level, usually not more than 25 to 40 percent of maximum, and there are frequent interruptions to rest, to converse, to view the scenery, to adjust equipment, or to ride a lift in preparation for another run.

Another possible factor is the relative state of preparatory conditioning. Most skiers make at least a modest effort to get in shape before the ski season, and perhaps carry over some degree of conditioning, as well as of skill, from the previous season. Many of the jogging deaths have apparently occurred in individuals who have gone precipitately from a life of physical inactivity to one of strenuous exertion. By way of contrast, the only skiers involved in energy expenditure comparable to that of running, cross country ski competition, have gone through prolonged conditioning and training programs.

### PUBLIC HEALTH ASPECTS

While acute pulmonary edema is clearly a medical problem, it is altitude-related, and will be discussed in another paper. There are other respiratory problems, however, which develop whenever large numbers of skiers and spectators congregate, as during the F I S World Championships, or during the Winter Olympic Games, problems similar to those which develop anytime large numbers of persons gather in areas with limited sanitary facilities, modified somewhat by winter temperatures. Dr. William W. Stiles, Professor of Public Health at the University of California at Berkeley and Medical Director for the VIIIth Winter Olympic Games at Squaw Valley, reported that 2200 names were recorded in their sick-book during the Games.<sup>2</sup> About 200 were spectators, 50

were athletes (this is not a realistic reflection of the actual incidence of injury or illness among the athletes, since most of the larger teams had their own physicians), another 50 were officials, and the remaining 1900 were Service personnel. Approximately half of those listed had surgical problems; the medical problems were those of infection or communicable disease. The common cold and influenza were frequent. There were only 42 cases of gastroenteritis, thanks to the rigid control of food-handling and dishwashing techniques, and of water supply and sewage disposal. The incidence of influenza in the Winter Games was significantly lower than during the pre-Olympic Games in 1959. It was felt that the important factors were the earlier peaking of the 1960 epidemic, the extra precautions to segregate contestants and team officials from other personnel, and improvements in sanitation of food, air and drink, rather than the prophylactic immunization given some 490 persons. Of this group, 57 became ill for an attack rate of 7.6 percent, quite similar to that of a group who received only placebos.

### MEDICAL CONTRAINDICATIONS TO SKIING

Since skiing is possible at a wide range of energy expenditures, there are few absolute medical contraindications. Any person who can walk could at least undertake cross-country skiing. A greater degree of physical agility would be desirable, of course, for downhill skiing. Any severe illness, particularly if recent, would be a contraindication, as it would be for any physical activity requiring a significant expenditure of energy. Parkinsonism, unless minimal, and hemiplegia, unless there has been essentially complete recovery, would be definite contraindications because of interference with the exact control and timing demanded in skiing. Compensated heart disease, on the other hand, would ordinarily not be a contraindication to recreational skiing.

### SKIING AS A THERAPEUTIC TOOL

To some physicians, the most important health aspect of skiing is its usefulness as a therapeutic tool. The most serious health problem of the present generation is coronary heart disease, now the most frequent cause of death in the American male, and still increasing gradually in incidence. Many studies have been made on the factors involved in its development, the role of cholesterol and other fatty substances in coronary arteriosclerosis, a factor underlying most heart attacks, is now almost as well known to the layman as to the scientist. The layman is generally not so familiar, however, with the studies which have related coronary heart disease to physical inactivity.

One of the early studies was on the comparative incidence of heart attacks in London bus drivers and conductors. The drivers, whose days were almost entirely sedentary, had many more attacks than did the conductors, who kept busy running up and down the steps to the upper deck.

Other studies have shown similar results. Review of



records of the Health Insurance Plan of New York revealed heart attacks were less frequent in physically active persons than in those who led sedentary lives. If an attack did occur in the physically active group, it was much less likely to be fatal, and recovery was more rapid.

An interesting and thought-provoking study was made on a group of Irishmen living in or near Boston, and on a comparable group of their brothers and cousins still living in Ireland. Though those in Ireland ate more than did their American relatives, their weight averaged 10 pounds less, and the incidence of coronary heart disease was much lower. The most significant difference between the two groups, from the standpoint of possible causative factors, was the greater degree of physical activity in those living in Ireland, and it was concluded that this was the major factor in the lower heart disease incidence.

With the relationship noted between physical inactivity and coronary heart disease, it was not surprising that exercise programs were developed for use in the recovery phases following heart attacks. The reports on such programs, and reports on preventive programs, have been almost universally favorable. Controlled, graduated exercise has even been shown to be of benefit in angina pectoris, where physical activity generally induces cardiac pain.

Why does exercise help the heart? Unfortunately, the answer still must be "We really don't know, though we do have some ideas." Under some conditions, vigorous exercise increases the size of collateral coronary vessels. Observations on veteran handball players, whose hearts functioned effectively in spite of definite evidence of damage to significant areas of heart muscle, suggest that this may be a factor in some individuals. Another thought-provoking suggestion is that physical inactivity sensitizes the heart muscle to the damaging effects of stress-produced catecholamines. Wilhelm Raab, of the University of Vermont, has stated that an important factor in cardiac susceptibility is "the widespread deficiency of antiadrenergic counter regulation that results from habitual lack of physical exercise."

The beneficial effects of exercise are not confined to the heart. The improved feeling of well-being from regular active exercise has long been known. And exercise is being increasingly recognized as an important factor in weight control; many overweight individuals do very poorly on food restriction alone, but will lose steadily if adequate exercise is combined with an appropriate, and usually less rigid, restriction of the food intake. It is distressing, with knowledge of this sort available, that the modern male should have succumbed so completely to the allure of labor-saving, and exercise-sparing, devices. It has

been said, and only semi-facetiously, that the invention of the automobile did more damage to the American male heart than any other single factor.

More and more physicians feel that active exercise is a must if an individual is to remain in optimum health, and live life to the fullest; such physicians tend to prescribe an exercise program, in addition to whatever other therapeutic measures may be indicated, when the average, flabby American male appears as a patient.

What type of exercise? The profession seems to be approaching general agreement that the most important forms of exercise are those which stress the heart and lungs. Most forms of calisthenics, and many types of gymnasium activity, are primarily muscle building, and besides being boring, do little if anything for the cardiopulmonary system, which is most benefited when the body's largest muscle masses, the legs, are used vigorously. Walking, hiking, climbing stairs, are good preparatory exercises, but are not vigorous enough for maximum benefit. Once the health-seeker has gotten into reasonable condition, he should advance gradually to more vigorous activities. Skipping rope and in place running are excellent, but the scenery doesn't change much. Jogging and running outdoors have more to offer, though complications may arise in settled neighborhoods. A secluded lake-shore road, though at times dusty, rocky and hilly, may be more attractive. And even more attractive might be Per-Olaf Astrand's Swedish course, finishing with a sauna and an icy dip.<sup>3</sup>

Where does skiing fit in? It provides vigorous exercise of a truly beneficial type. It is sustained enough so that it may be an important factor in weight control. Even more important, it is fun. Once its joys have ensnared him, the weary and often discouraging hours of instruction and practice seem but unimportant steps on the skier's way to competence, and he happily turns to such substitute summer activities as jogging, swimming, cycling or mountain climbing, just to be in top condition when the first snowflakes fall.

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W. 104 Fifth Ave., Spokane, Washington 99204



# Altitude and Skiing\*

MERRITT H. STILES, M.D.

## INTRODUCTION

Though skiing, except for low altitude touring, is characteristically a mountain activity, altitude is rarely a problem. The physiological principles involved are simple, though a detailed explanation may seem somewhat complex.

## ALTITUDE ACCLIMATIZATION

Fundamentally, physical activity is dependent upon the utilization of atmospheric oxygen by muscle cells in the production of energy. As Knuttgen<sup>1</sup> has pointed out, this process involves a number of steps (Table I). Yet these steps, as involved and complex as they may seem, are concerned with oxygen transport, and hence are only preliminary to the subsequent phases of oxidative metabolism, with storage and usage of oxidative energy in the more comprehensive process of aerobic energy release.

From the standpoint of physical activity at altitude, the important factor is that the barometric pressure and the partial pressure of oxygen are lower than at sea level. At 7500 feet elevation, for example, higher than Eastern and Central skiing, though somewhat lower than the major Colorado areas, the partial pressure of oxygen is about 20 percent lower than at sea level. This is of no consequence in ordinary physical activity, which uses only a minor portion of an individual's oxygen capacity. Usual Blood Oxygen Saturation at sea level is 97% – at 7500 feet it is 94.7% – a decrease which is about equivalent to that of an individual at sea level who smokes more than ½ pack of cigarettes per day. Nor is it of consequence even in maximum effort which does not last over one and three-quarters to two minutes, as was demonstrated so well in the 800 metre running events at Mexico City in 1968. This is because oxygen debt, or anaerobic capacity, is the principal factor in short duration effort. Energy for muscular activity comes from the splitting of high energy compounds, adenosine triphosphate and creatine phosphate. Oxygen is essential to resynthesize these compounds; the oxygen deficit required for resynthesis is termed the lactic oxygen debt. When a high work load is continued over a longer period of time an added mechanism comes into play, the breakdown of glycogen with the release of energy and the formation of lactic acid, constituting the so-called lactic acid oxygen debt. Various estimates of the total oxygen debt capacity have been made. The theory of its measurement is simple, but actual application presents difficulties and quite widely varying results have been reported. Dill and Saktor's value of 5 to 6 litres in well-conditioned athletes, approximate-

TABLE I

### DELIVERY OF ATMOSPHERIC OXYGEN TO MUSCLE CELLS

1. Delivery of air to alveoli by pulmonary ventilation
2. Diffusion of oxygen from alveoli to plasma through pulmonary membrane and capillary wall
3. Diffusion through red cell membrane and union with hemoglobin
4. Delivery to systemic capillaries through blood flow
5. Diffusion through red cell membrane to plasma
6. Delivery to tissue cells by diffusion and extracellular fluid flow
7. Diffusion through muscle cell membrane

ly equal to the maximum oxygen uptake for a period of a minute, is perhaps the most realistic estimate available.<sup>2</sup>

Even though it may be of little importance to the average skier, altitude acclimatization does occur, though the factors involved are not entirely understood. There is evidence to suggest that altitude acclimatization and conditioning at any altitude are only different phases of the same general process. Both produce a relative hypoxemia, followed by a series of adaptive changes.<sup>3</sup> Increased pulmonary ventilation, the most prompt in onset, has been most studied and written about. It long has been known that a decrease in the partial pressure of oxygen in the inspired air leads to an increase in ventilation through its effect on carotid and aortic chemoreceptors. There is no agreement, however, as to the altitude where this mechanism comes into play. While it has been stated that adaptive changes may occur at elevations as low as 1000 meters, most authorities place the critical altitude much higher. Van Lier and Stickney<sup>4</sup> state that in experienced subjects at rest there was no effect on the respiratory rate up to 10,000 feet, and only very minor increases up to 16,000 feet, with about 20 percent increase at 20,000 feet, but that with exercise there was a definite increase at 14,000 feet.

Yet it is generally agreed that there is considerable individual variation, and that many, if not most, lowlanders newly arrived at moderate altitude demonstrate increased ventilation which disappears with continued residence. This hyperventilation cannot be accounted for by any known chemical changes in the blood, and the probable role of neurogenic factors has been suggested by many authorities. As at sea level, hyperventilation leads to an alkalosis, which accounts for the symptoms experienced by many altitude newcomers. The hyperventilation, if persistent, may lead to transient phasic breathing,<sup>5</sup> particularly at night and even at moderate altitude. The cycles, which are shorter than is the rule in subjects with heart disease, are clearly related to hyperventilation, since hypocapnia is present even during the apneic phase.<sup>5</sup> It is of interest that inappropriate hyperventilation may even be present following strenuous exercise.<sup>6</sup>

\*Presented February 3, 1971, Conference on Skiing Injuries, American Academy of Orthopedic Surgeons, Snowmass-at-Aspen, Colorado.

With prolonged residence at altitude, the red blood cell mass is increased, and at elevations about 10,000 feet pulmonary hypertension develops.<sup>7</sup> In considering these changes, along with the increased ventilation, Hecht has stated: From the standpoint of the altitude dweller, sea level man is a pulmonary hypotensive, anemic hypoventilator.<sup>5</sup>

While there have been conflicting reports on the effect of altitude on cardiac output, there is agreement that the maximum oxygen uptake is decreased, because of the lower partial pressure of oxygen. There is agreement, further, that the oxygen uptake improves with training, most of the improvement coming within 10 to 14 days at moderate altitude. Increased hemoglobin and myoglobin, increased tissue vascularization and widened arteriovenous oxygen difference are factors in this improvement. There is evidence also that the anaerobic capacity may increase.<sup>3</sup>

#### CROSS COUNTRY SKI COMPETITION

Altitude has never been considered a problem in Alpine ski competition; competitive events are of short duration, and the effort required mostly submaximal. Altitude has been considered important, however, in cross country skiing, with an International Ski Federation regulation that cross country competition should not be held at altitudes higher than 1500 meters. It is true, of course, that any given cross country race would require a longer running time at an altitude above 1500 meters than it would at a lower altitude, just as would any prolonged event requiring maximal effort. Studies related to the XIX Olympiad demonstrated clearly that, while performance times may be prolonged in competition at higher altitudes, all contestants are equally affected, there is no danger which does not exist at lower altitudes, and altitude acclimatization in a well-conditioned athlete does not require more than two to three weeks. While it is my feeling that the archaic FIS restriction on cross country competition should be discarded, my recommendation to this effect, at the International Colloquy on Medical Problems Related to Championship Skiing,<sup>8</sup> held at Grenoble in 1968, has had no noticeable effect.

#### PULMONARY EDEMA OF ALTITUDE

Our discussion up to this point has suggested that any altitude discomfort experienced by the average Alpine skier is psychological rather than physiological. As an aside, some of you may have had difficulty in selling this idea to acquaintances, as I have. I recall particularly two persons, one a Professor of Cardiology at a prestigious Eastern school who refused to believe that the symptoms he had experienced riding in a car at 7500 feet elevation might have been the result of subconscious hyperventilation, the other an intelligent professional who refused to admit that the discomforting symptoms she always experienced during her first two to three days at Vail were psychological in origin, until she remembered that she never had any trouble at Aspen.

There are occasional physiological problems which may affect the high altitude skier, the most serious being pulmonary edema. This is a rare, and still rather mysterious, disorder which occurs in the unacclimatized sea level dweller who ascends rapidly to an elevation above 10,000 feet and engages in heavy, often unaccustomed, physical activity as mountain climbing, armed combat, and, very rarely, skiing. Strangely, it is more frequent in previously acclimatized altitude dwellers who return to altitude after a sojourn of ten days or more at sea level.<sup>9</sup>

The first symptoms, which appear from 6 to 36 hours after arrival at altitude, consist of a dry cough, dyspnea, weakness, and pain or pressure in the lower substernal area.<sup>10</sup> Anorexia, nausea and vomiting, may appear. Later respiration becomes noisy with audible wheezing; bubbling rales are present. Orthopnea and hemoptysis may develop. In severe cases, chest x-ray reveals confluent or nodular densities, bilateral or unilateral. Central pulmonary vessels are full and the pulmonary arteries may be prominent. The electrocardiogram may show changes suggestive of right ventricular strain.

While some features suggest pneumonia, there is little if any leucocytosis, the sedimentation rate is normal and antibiotics are ineffective. On the other hand, bed rest and oxygen therapy, best under positive pressure, or return to lower altitude, bring prompt relief.

Cardiac catheterization during the acute stage has revealed marked pulmonary hypertension, a low cardiac output, and normal pulmonary wedge pressure. The calculated pulmonary arteriolar resistance is markedly elevated, compatible with arteriolar constriction. Oxygen therapy results in a prompt fall in pulmonary artery pressure.

The mechanism of edema formation is not known. The elevated pulmonary artery pressure may be a factor, yet it is a normal occurrence found in all persons at higher altitudes. Blount and Vogel found the pulmonary artery pressure normal at 7500 feet in normal subjects, but elevated at 10,000 feet, 25 mm in comparison with 15 mm at Denver's 5000 feet. The difference was still greater with exercise, 12 – 16 mm at 5000, and 25 – 54 mm at 10,000 feet. The rise in pulmonary artery pressure was gradual going from 5000 to 10,000 feet, but more rapid in going from 5000 to 14,000 feet.<sup>7</sup>

Pulmonary edema of altitude is readily distinguished from acute mountain sickness, which comes on immediately on arrival at altitude rather than after a delay of 6 or more hours. Yet it has been speculated that the hyperventilation of the altitude newcomer coupled with severe exercise hyperventilation might deplete lung surfactants, which, combined with exertional distention of the capillary bed, might favor alveolar fluid escape in susceptible persons.<sup>11</sup>

Regardless of the pathogenetic mechanism, acute pulmonary edema is rare. Yet its remote risk for the average skier still emphasizes the importance of adequate physical conditioning prior to a skiing expedition at high altitude, and it suggests that the poorly-conditioned lowlander



who is planning a high altitude ski vacation might be well advised to spend a day or two skiing at moderate altitude enroute to his high altitude destination. It has been suggested that a couple of days rest at high altitude might be helpful before engaging in active exercise. This recommendation leaves me unenthusiastic, in view of the rapid deterioration which follows even short periods of inactivity.<sup>12</sup>

#### ACUTE MOUNTAIN SICKNESS

Newcomers to altitude may exhibit a variety of symptoms: headache, insomnia, malaise, unrest, lassitude, apathy or heightened irritability, incoordination, diminution of visual acuity, decrease in auditory perception, muscular weakness, fatigability, disturbances in breathing, tachycardia and lack of appetite. These symptoms, which begin to appear immediately on arrival at altitude, are grouped under the term "acute mountain sickness." They are assumed to be primarily the result of subconscious hyperventilation and alkalosis. The skier who experiences such symptoms might just as well laugh them off and go on his way; there is no specific cure, though possibly re-breathing to avoid the loss of even more carbon dioxide might be of benefit.

#### CHRONIC MOUNTAIN SICKNESS

Chronic Mountain Sickness, also called Seroché or Mongé's Disease, is another story. It is found only after prolonged residence at higher elevations; it is characterized by excessive erythrocytosis, beyond the expected altitude response. The symptoms in some respects are similar to those encountered in polycythemia and in syndromes associated with alveolar hypoventilation at sea level, notably severe obesity, constrictive airway disease, or post-encephalitic syndrome. The few studies available suggest the syndrome may be an example of alveolar hypoventilation at altitude, initiated by an apparent loss of chemoreceptor drives resulting in relative hypoventilation, hypercapnia and erythrocytosis.<sup>13</sup> Symptoms are relieved promptly by descent to a lower altitude.

Chronic mountain sickness should not be a problem to the Alpine skier unless he chooses to reverse the usual skier pattern, skiing at customary altitudes but then ascending a mountain to spend the rest of his time at much higher elevations.

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W. 104 Fifth Ave., Spokane, Washington 99204

#### Physician Drug Registration

The Deadline for use of physician registration numbers under the Controlled Substances Act has been extended to July 29, the Bureau of Narcotics and Dangerous Drugs announced. The law went into effect May 1, but the bureau said physicians who have applied for registration but who have not received their BNDD numbers may continue to practice without interruption by indicating "Federal registration applied for on (date)." After July 29, the bureau said, "no activity with controlled substances will be permitted without use of a valid BNDD registration number. — AMA Newsletter, Vol. 3, No. 19, May 10, 1971



## Preliminary Report — Diabetes Committee

Plans were made for a most extensive Diabetes Detection and Education Program ever for 1970-1971 for the State of Maine. These were executed with amazing success and consisted of not only a statewide basis, but also on a county and local level. It appeared of interest to present the program in detail.

As in the past, it was a combined effort of the Maine Medical Association, through its physician members and Daniel F. Hanley, M.D., Executive Director of the Maine Medical Association, and his staff, and the Maine Pharmaceutical Association and its state chairman, Mr. Alcide Nadeau of Lewiston. Other groups who participated were nurses, hospitals, schools, both public and parochial, industries, theatres, colleges, newspapers, radio and TV stations, service installations and many other public-spirited citizens.

Every hospital in the State with the exception of three participated. These numbered 50.

A chairman was selected for the Diabetes Committee of each county medical society. In addition, the Maine Pharmaceutical Association, through its state chairman, Mr. Nadeau, selected a chairman for each of its county pharmaceutical society Diabetes Committee. They were asked to contact the chairman of their county medical society Diabetes Committee so as to integrate their programs for the mutual benefit of both.

The following is a list of the chairmen of the various medical society Diabetes Committees:

Androscoggin County — John Milazzo, M.D., Auburn

Aroostook County — Leonid G. Toussaint, M.D., Fort Kent

Cumberland County — Norman W. Saunders, M.D., Portland

Franklin County — Roger E. Condit, M.D., Farmington

Hancock County — Arthur M. Joost, Jr., M.D., Bucksport

Kennebec County — Lorrimer M. Schmidt, M.D., Togus

Knox County — Mustafa V. Onat, M.D., Thomaston

Lincoln-Sagadahoc County — Frank O. Avantaggio, Jr., M.D., Damariscotta

Oxford County — Hagop Halladjian, M.D., Rumford and Warren C. Hazelton, M.D., South Paris

Penobscot County — Lewis E. Phillips, M.D., Bangor

Piscataquis County — Francis W. Bradbury, M.D., Dover-Foxcroft

Somerset County — Harland G. Turner, M.D., Norridgewock

Waldo County — Norman E. Cobb, M.D., Belfast

Washington County — Karl V. Larson, M.D., East Machias

York County — Melvin Bacon, M.D., Sanford

The following is a list of Suggestions sent to each county medical society Diabetes Committee chairman:

"Realizing that you are very busy, I have taken the liberty to help organize the Diabetes Detection and Edu-

cation Program on a statewide basis. This was done in an effort to make it easier for you. The following includes a description of what I have done and also a few suggestions:

"I have contacted all the hospitals with which you are associated in your county and asked them to set up a program (a copy of which I have enclosed). They have been offered free Testape or Clinitest tablets for screening urines for Glycosuria. We will enclose a list of those hospitals in your county which have already requested testing materials. Check with the remaining hospitals (MD) in your county and send me the amount of either Testape or Clinitest tablets or both that they desire and I will send it to them. I will also send them posters and pamphlets.

"Have all the physicians (MD) in your county check urines free for Glycosuria during Diabetes Week which is from November 15 to 21. Arrange with all the hospitals (MD) in your county to do blood sugars on all patients upon referral by their physicians (MD) at a minimum cost (\$1.50) during this period. I will contact industry at a later date and set up urine screening programs. This can be done on a year-round basis. Also contact the various superintendents of all the public schools in your county and arrange a testing program for Glycosuria on a yearly basis. This is to include students, teachers and other employees. The parochial school system is all taken care of.

"As for TV stations, I am sending each one a one-minute film short. Please contact them for further publicity if there are any in your county. I am sending each radio station and newspaper in your county a preliminary announcement. Would you please send them follow-up stories and announcements about your program. The chairman of the county pharmaceutical Diabetes Committee will contact you so as to fit his program with yours. They will be distributing Dreyapak kits and using their stores for testing stations as well. All movie theatres in your county that are open will be receiving a film short on Diabetes.

"If I can be of further help, please contact me collect by phone at 324-3632. Do not hesitate to conduct your program any way you see fit. Our slogan is, "As Maine Goes, So Goes The Nation, Diabetically Speaking."

"P.S. Please keep records of the results of all your various programs. The American Diabetes Association will be sending you requisitions for supplies if they have not already done so."

There were three methods available for screening individuals for Glycosuria. There was the Dreyapak kit method, Clinitest tablets or Testape. Thousands of Dreyapak kits were distributed throughout the State. About 70,000 were allotted for the State from the American Diabetes Association office in New York. Each drugstore in the entire State, numbering 215, distributed these to their customers at no charge. Other outlets included

schools, hospitals, colleges and industry. As for Testape and Clinitest tablets, some schools, industry, colleges and town programs utilized either one of these methods.

All TV stations, both educational and commercial, were contacted and participated 100% in this endeavor. There were three of the former and seven of the latter. For the most part, they showed a one-minute film short on Diabetes. Some TV stations were asked to present physicians to speak on their stations. Newspapers and radio stations were contacted and asked to participate in Diabetes Week. In all, your chairman contacted all the 27 newspapers in the State and 27 radio stations. Theatres in the State that were opened numbered 39. They were given a one-minute film short to show during Diabetes Week.

Another feature of the State program included contacting all the heads of the various Protestant and Catholic religious denominations, asking them to arrange with their subordinates throughout the State to announce from the pulpit and in their bulletins that Diabetes Week was November 15 to 21, 1970, and informing the members of their various congregations of the availability of a simple Diabetes test and urging them to be tested. Bishop Peter Gerety of the Catholic Diocese was invited to participate for his group. In addition, he very graciously arranged for Sister Louise of the Mercy Hospital to coordinate the program, making available tests for Diabetes to all the parochial school children, their teachers and other personnel in Maine. She did a masterful job. An added point of interest here would be to mention the fact that several paper houses in the State contributed several thousand paper cups for the collecting of specimens for their testing.

Colleges that took part in the State program were Colby College, Waterville; University of Maine, Orono; St. Francis, Biddeford, and the Nason College faculty, Springvale.

The government installations, namely, the Brunswick Naval Air Station and Loring Air Force Base were also asked to participate in this program.

An interesting feature of one of the County (York) programs included the selection of a chairman, member of the county medical society and the Maine Medical Association for each town, city or area, none of which were left uncovered. These were:

Charles W. Kinghorn, M.D.	Kittery
Anthony Bonanno, M.D.	Berwick
John J. Murphy, M.D.	South Berwick
Alexander W. Magosci, M.D.	York
Ruth E. Endicott, M.D.	Ogunquit
Oney P. Smith, M.D.	Wells
Robert F. Ficker, M.D.	Kennebunkport
J. Robert Downing, M.D.	Kennebunk
Andre P. Fortier, M.D.	Biddeford
William B. O'Sullivan, M.D.	Saco
Michael M. P. Magaouda, M.D.	Old Orchard
S. Dunton Drummond, M.D.	Bar Mills, Hollis Center
Paul C. Marston, M.D.	Kezar Falls, Cornish
Carl E. Richards, M.D.	Alfred

Marion K. Moulton, M.D.

West Newfield

Melvin Bacon, M.D.

Sanford, Springvale

Each chairman was sent a set of instructions similar to that of the county chairmen as to what to do to observe this campaign. All the physicians in the county were supplied with testing material, posters and pamphlets as were other sites. These were distributed to them by the York County Community Action Group. In addition, the chairmen were instructed to contact the radio stations and newspapers, industries and also hospitals in their area, inviting them to participate. He was asked to arrange with the hospitals in his town, city or area where there were some present to have them do urines free for Glycosuria and Blood Sugars at a reduced rate during Diabetes Week. They were also asked to check with their newspaper and arrange for publicity for their own programs. All theatres in the county, including open air, showed a one-minute film short on Diabetes. This was also part of the State program.

Much of the county industries also participated in this venture. Many Dreyapak kits were distributed throughout, in addition to Clinitest tablets and Testape. I am happy to say that practically all the school children, both public and parochial, were given the opportunity to take part as were the teachers and other employees in this particular county.

Where there were no physician members of the county medical society in this county, the various Health Councils and Public Health Nurses carried on some interesting programs. In several towns, a kit was made up of a strip of testing material, a Diabetes pamphlet and instructions as to how to use it and where to report the results. About 1500 of these were distributed house to house with one kit for each member of the household. In other towns, kits such as these were placed in the post office boxes. In another town about 1000 Dreyapak kits were distributed.

One large town in this county (Sanford) set up a program which appears of interest to add to this paper. Some of the ideas are repetitious.

The local hospital, in addition to testing urines free for Glycosuria and doing blood sugars at a reduced cost, displayed a Diabetes Book exhibit, Diabetes Diet exhibit and a drug exhibit. The public and parochial schools had a testing program as already stated. All physicians in the town received ample testing material at no charge and all tests for Glycosuria were free during Diabetes Week. Every industry here was covered and they distributed Dreyapak kits to each of their employees. The distribution and collection of material and other arrangements for those industries were set up by the Sanford Key Club, a group of enterprising high school students of this town. The drugstores participated as a part of the State by passing out Dreyapak kits to each of their customers.

Other features carried out here, as part of the statewide program, included announcement from the pulpit and in weekly bulletins by churches of all denominations, urging their members to be tested for Diabetes. In addition, the Portland and local newspapers publicized Diabetes Week



as did the local radio stations. Pamphlets and posters were distributed all over town.

Newer ideas included the checking of employees and patients at nursing homes and town employees and Town Farm inhabitants. The Community Health Association and the Welfare Nurse assisted in this endeavor and utilized their office as a testing station.

To mention a few of the industries that participated, there were the Pepperell, Biddeford; Maremont of Saco; Components of Biddeford and Bath Industries, Bath, Maine. Communications have been received from other interested industries and these programs are in the process of being set up. The State program will be continued to about June 1st, and plans call for contacting other industries and public schools.

Of the thousands of Dreyapak kits that were distributed all over the State, those that were returned were addressed to: Diabetes, Box 609, Sanford, Maine to assure a confidential nature. All these were checked under the guidance of Mrs. Charlene Ford with the help of the Sanford Community Health Association, Mrs. Marilyn Roberts, R.N., Supervisor. The Science Club of Nasson College also played an important role in this particular endeavor. Mention should be made again of the Sanford High Key Club who assembled all the Dreyapak kits that were sent out. Every Dreyapak kit returned was notified of the results whether positive or negative — a job well done. Each positive found was sent a form to present to his or her

physician. He, in turn, was asked to complete and return in a self-addressed envelope for statistical purposes.

This program is conducted on a year-round basis, but for the most part, it was a concentrated effort during National Diabetes Week, November 15 to 21.

A natural question which will come to your mind is how this material was distributed. It was very easily done. Congdon's Transportation of Portland, Maine distributed all the necessary material to the various hospitals throughout the State and also to the service installations. Wholesale druggists in Portland dispensed the material to all the drugstores. All the radio stations, newspapers and TV stations were contacted by mail. I, personally, saw to it that industry, some public schools, and county chairmen received their material.

As this is a preliminary report, the plans call for a statistical analysis to be presented at the annual meeting of the Maine Medical Association in June.

In conclusion, may I extend my thanks to all those good chairmen, physicians, nurses, hospitals, pharmacists, school personnel, members of the laity, business representatives, etc., who made this a successful endeavor. It was a wonderfully well-organized program and there are not enough words to express my appreciation to them.

This program was made possible through grants from The Upjohn Company, Kalamazoo, Michigan and the Maine Medical Association.

MELVIN BACON, M.D., *Chairman*

#### PHYSICIAN'S ASSISTANT — SECOND LEVEL ENTREPRENEUR?

*Continued from Page 135*

course of follow-up visits can be recorded in tabular or graphic fashion, making interpretation much easier for the physician or the P.A. and making audit even more efficient. Neither physician, P.A., nor auditor can effectively utilize data recorded in several places in the clinical record without any attempt by the physician or the P.A. to relate it to a specific problem.

Charles F. Code has written with remarkable clarity of a plan for health care delivery.<sup>4</sup> He envisions the physician at the "apex of the medical decision-making process." He sees a variety of allied health professionals working together within the system. Present health care delivery is likened by him to yesterday's telephone system in which each community had its own company and "sometimes more than one." The properly structured medical record must become the standardized document through which all participants in our system of health care communicate.

In summary then, before we can effectively employ P.A.'s, we must build a system of health care based on the above principles of a defined data base, complete problem list, documented plans for each problem and numbered and titled progress notes. As such a system evolves,

the needs for assistants at each of the four levels of care will become apparent. In response to these needs, and specifically those which cannot be met by available physician manpower, we must train assistants for specific tasks within the system. For the present, lest we err by producing P.A.'s who are but entrepreneurs at another level, we must confine their tasks to those for which algorithms can be developed. Their role then can be audited simply by determining whether they are capable of making accurate measurements and observations and whether they adhere consistently to their assigned tasks. Within these boundaries, they can most effectively contribute to quality controlled comprehensive health care.

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3. Lawrence L. Weed: Medical Records, Medical Education, and Patient Care, Cleveland: Press of Case Western Reserve University, 1969.
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## Honorary Pin Recipients Receive Awards at 1971 Annual Session of the M.M.A.

Presentation of the Association's Honorary Pins were made by Charles R. Glassmire, M.D., President of the M.M.A., at the Annual Banquet, Monday evening, June 14 at 7:00 P.M.

### FIFTY-YEAR PINS

Fifty-Year Lapel Pins were presented to the following members who were graduated from Medical School in 1921:

#### Androscoggin County

**EUSTACHE N. GIGUERE, M.D.** — Dr. Giguere, who was born in Lewiston, Maine, has been a general practitioner in that city since 1921, during which time he has also been on the staff at St. Mary's General Hospital. He attended the University of Sherbrooke, Sherbrooke, Quebec, Bates College and received his medical degree from Bowdoin Medical School in 1921. He interned at the Maine Eye and Ear Infirmary in Portland and took postgraduate courses at Tufts University School of Medicine. Dr. Giguere served during World War I from January 12 to December 12, 1918.



Dr. Giguere

#### Cumberland County

**LEON BABALIAN, M.D.** — A native of Paris, France, Dr. Babalian now resides in Portland, Maine where he practiced Dermatology since 1937. He received his medical degree from the School of Medicine of Paris in 1921 and practiced in Paris from 1921 until 1937 when he came to Maine. He was Assistant of the St. Louis Hospital in Paris from 1921 to 1937, a member of the French Society of Dermatology, the Canadian Dermatological Association, the N.E. Dermatological Society and an Honorary Staff member of the Maine Medical Center.

**EDWARD BLUMBERG, M.D.** — Dr. Blumberg, a native of Leipzig, Germany, received his medical degree from the University of Leipzig Faculty of Medicine, Saxony in 1921 and interned at Clinics at that University from 1921 to 1923. He specialized in Mental Deficiencies and was on the staff at Pine-land Hospital and Training Center in Pownal, Maine from 1955 to 1965 when he moved to Brooklyn, New York where he now resides.



Dr. Babalian



Dr. Blumberg

#### Oxford County

**HENRY M. HOWARD, M.D.** — Dr. Howard was graduated from Bowdoin Medical School in 1921 and interned at the Maine Eye and Ear Infirmary and Waterbury General Hospital in 1921 and 1922. He took postgraduate courses at the Pratt Diagnostic Clinic and at Harvard Medical School. He is a general practitioner and has practiced in Rumford, Maine since 1922. A native of Andover, Maine, he served in the U.S. Navy in World War I and in the U.S. Army Medical Corps in World War II from 1942 to 1946 and was discharged as a Major.



Dr. Howard

### FIFTY-FIVE-YEAR PINS

Fifty-Five-Year Pins were presented to the following members who received Fifty-Year Pins in 1966:

#### Cumberland County

**GEORGE O. CUMMINGS, SR., M.D.** — Dr. Cummings, a native of Portland, Maine, was graduated from Bowdoin College in 1913 and received his medical degree from Bowdoin Medical School in 1916. He interned at the Maine General Hospital from 1916 to 1917, attended the Graduate School of Medicine of the University of Pennsylvania from 1922 to 1923 following which he returned to Portland where he limited his



Dr. Cummings

practice to the disease of the ears, nose and throat. Dr. Cummings, a diplomate of the Board of Otolaryngology, is a member of several national medical organizations. During World War I, he served in the U.S. Navy from 1917 to 1919.

HERMAN C. PETTERSON, M.D. — Dr. Pettersen, a general practitioner at Chebeague Island, Maine is a native of Chicago, Illinois. He attended schools in Naperville, Illinois and received his medical degree from Hahnemann Medical College in 1916. He interned at the New York City Hospital and the Massachusetts Memorial Hospital from 1916 to 1917 and took postgraduate courses at Harvard Medical School in 1920. Dr. Pettersen practiced in Boston from 1921 to 1953, during which time he was Chief of Pediatrics at the Massachusetts Memorial Hospital from 1931 to 1953, the St. Margaret Hospital from 1946 to 1953 and the Massachusetts General Hospital from 1933 to 1953.

#### Hancock County

HAROLD S. BABCOCK, M.D. — Dr. Babcock, a native of Hampden, Maine, is a general practitioner and has been located in Castine since 1918. He was graduated from Hampden Academy in 1906, received his medical degree from Jefferson Medical College in 1916 and interned at the Eastern Maine General Hospital. Dr. Babcock took postgraduate courses at Harvard Medical School and at the Massachusetts General Hospital. He was in charge of the Castine Community Hospital from 1918 to 1952.

#### Somerset County

MAURICE E. LORD, M.D. — A native of West Brooksville, Maine, Dr. Lord is retired and now lives in Lake Placid, Florida. He was graduated from Coburn Classical Institute, Colby College and received his medical degree from the University of Vermont College of Medicine in 1916. He interned at the Mary Fletcher Hospital in Burlington, Vermont. Dr. Lord practiced in Skinner, Maine for one year before locating in Skowhegan in 1918 where he practiced until his retirement.

### SIXTY-YEAR PINS

Sixty-Year Pins were presented to the following members who received Fifty-Year Pins in 1961:

#### Cumberland County

JAMES PATTERSON, M.D. — Dr. Patterson, a native of Scotland, now resides in Portland, Maine. He was graduated from Hyde Park High School in Chicago in 1902, the University of



Dr. Patterson

Chicago in 1905 and received his medical degree from Rush Medical College in 1911. Dr. Patterson interned at the Presbyterian Hospital in Chicago and held hospital appointments there and at the White Plains Hospital in New York before coming to Maine in 1940. He is now retired.

#### Knox County

FRED G. CAMPBELL, M.D. — A general practitioner in Warren, Maine since 1913, Dr. Campbell is a native of Rockland, Maine. He attended the University of Maine in Orono and received his medical degree from Baltimore Medical College in 1911. He interned at the Worcester State Hospital in Massachusetts.

#### Oxford County

LESTER ADAMS, M.D. — A long-time superintendent of the Western Maine Sanatorium in Hebron, Dr. Adams is now retired and lives in Thomaston, Maine. He was graduated from Bowdoin College and received his medical degree from Johns Hopkins University School of Medicine in 1911. He took postgraduate courses at the St. Francis Hospital in Pittsburgh, Pennsylvania and was a Consultant at the Eastern Maine General Hospital where he served as Pathologist from 1914 to 1917. Dr. Adams is a native of Bangor, Maine.

#### Piscataquis County

EDWIN T. WYMAN, M.D. — A native of Sebec, Maine, Dr. Wyman retired from the practice of Pediatrics in Boston in 1969 and is a summer resident of Bowerbank, Maine. He attended Higgins Classical Institute and received his medical degree from Tufts University School of Medicine in 1911. He interned at the Mt. Auburn Hospital in Cambridge, Massachusetts.



Dr. Wyman

settles from 1912 to 1913 and was a resident at the Children's Hospital in Boston from 1914 to 1915. Dr. Wyman was in the Pediatric service at the Children's Hospital, Boston, the Mt. Auburn Hospital, Cambridge and the Boston Lying-In Hospital, Boston from 1914 until 1969 and is at present Physician Emeritus at the Children's Hospital Medical Center in Boston. He was for many years instructor in the Department of Pediatrics at Harvard Medical School. During World War I, he served in the U.S. Army Medical Corps and was discharged as a Major.

#### Somerset County

MERLON A. WEBBER, M.D. — Dr. Webber, a native of Burnham, Maine, was graduated from Coburn Classical Institute, Bowdoin College and received his medical degree from Bowdoin Medical School in 1910. He took postgraduate courses at the Central Maine General Hospital. Dr. Webber, a general practitioner, practiced in Portland from 1910 to 1917 and 1919 to 1925 when he went to Pittsfield where he is still located. During World War I, he served in the U.S. Army Medical Corps from 1917 to 1919.

#### Waldo County

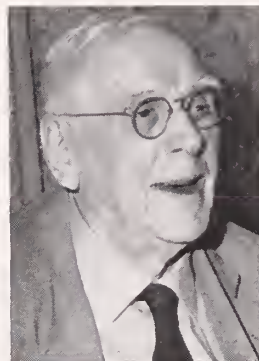
CARL H. STEVENS, M.D. — Dr. Stevens was President of the Maine Medical Association in 1942-1943 and President-elect in 1941-1942. He was Councilor for the Fourth District from 1938 to 1941, the latter year as Council Chairman. He graduated from the Maine Central Institute, Pittsfield, Maine in 1903 and received his medical degree from Bowdoin Medical School in 1911. He took postgraduate courses at the New York P. G. and the New York Lying-In Hospital. Dr. Stevens has practiced at the Waldo County General Hospital in Belfast, Maine since 1913. He is a native of Northport, Maine.

### SEVENTY-YEAR PIN

A Seventy-Year Pin was presented to the following member who received his Fifty-Year Pin in 1951:

#### York County

ANSEL S. DAVIS, M.D. — Dr. Davis received his medical degree from Bowdoin Medical School in 1901. He is a native of Somersworth, New Hampshire and now resides in Springvale, Maine where he had practiced from 1903 until his retirement several years ago. He was a member of the general staff at Henrietta Goodall Hospital in Sanford from 1929 to 1945. Dr. Davis had the honor of being the first recipient of a seventy-year pin.



Dr. Davis

### Government Control of Medical Practice On Agenda of International Surgical Meeting

"What's New In Medicine" is the main theme of the Thirteenth Annual Midsummer Meeting of the International College of Surgeons (ICS). Leading surgeons from the United States and Eastern Canada will highlight the scientific program to be held June 28-July 2, 1971 at the Mount Washington Hotel in Bretton Woods, N.H., in the White Mountains National Parks area.

Members of the surgical and allied professions are invited to attend the meeting sponsored jointly by the New England States Region, this year's host, Eastern Canadian Region and New York State Surgical Division of the ICS.

The five-day scientific presentations emphasize the latest developments in each field of surgery as they apply to the practicing physician and their use in the hospital setting. The format of the program will be a series of 12 symposia to allow for the presentation by each recognized authority followed by audience participation to allow an exchange of opinions and experiences.

The meeting is open to doctors from all over the world who wish to attend. The General Chairman of the meeting is Salvatore Traina, M.D., Medford, Mass. with co-chairmen Alfred L. Solow, M.D., Medford, Mass.; Dr. Eugene F. Balangero, Montreal, Quebec, Canada, and Magin Sagarra, M.D., New York, N.Y.

The I.C.S. is a world federation of surgeons and surgical specialists from 76 countries with a membership exceeding 15,000. Its international headquarters are at 1516 N. Lake Shore Drive, Chicago, Ill.

For further information contact: Salvatore R. Traina, M.D. — (617) 396-8100, 155 High Street, Medford, Mass. 02155.



# The Journal of the Maine Medical Association

DANIEL F. HANLEY, M.D., Brunswick, Editor

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## Across The Desk

### Statement on Venereal Disease

In view of the alarming increase in reported cases of infectious syphilis and because gonorrhea is now pandemic in the United States, the Council on Environmental and Public Health, American Medical Association, has prepared the following statement for the information and guidance of medical societies:

The American Medical Association Council on Environmental and Public Health reports that gonorrhea ranks first and syphilis third among the reportable communicable diseases in the United States. For the year ending June 30, 1970, infectious syphilis rates were eight percent higher nationally than a year earlier, with annual increases spread over 33 states and an estimated incidence between 70-80,000 reported cases; there are 250,000 cases of all forms of syphilis estimated to be diagnosed and treated each year.

At the same time, gonorrhea morbidity exceeded 573,000 reported cases. Gonorrhea is pandemic in the United States, with an estimated two million cases.

The Council urges medical societies to acquaint their membership with the growing and alarming dimensions of the VD problem. Physicians should take all appropriate measures to reverse the rise in venereal disease and bring it under control.

Physicians in private practice treat approximately 80 percent of the syphilis and gonorrhea that comes to diagnosis but report to public health departments only one out of every eight cases of syphilis and one out of every nine cases of gonorrhea they treat. Physicians should assist public health departments by reporting the VD cases they treat. Medical societies are urged to cooperate and give broad support to public health authorities. Much effort must still be made by health departments and medical societies to foster mutual trust so that public and private medicine can work effectively for the control of both syphilis and gonorrhea.

The Council also urged medical societies to continue efforts for the enactment of state laws to permit physicians legally to treat VD cases of minors without obtaining

parental consent. Currently, 35 states have laws and 6 states have attorneys general's opinions permitting treatment of minors for VD without permission of parents. Such sanction is not provided in the states of Alabama, Arizona, Georgia, Mississippi, Minnesota, Missouri, Ohio, Wisconsin, and Wyoming.

There are also 11 states which do not have laws or regulations requiring all serological laboratories to report reactive specimens by name of patient and physician to the health department. They are Alaska, Arkansas, Colorado, Idaho, Indiana, Louisiana, Maine, Massachusetts, North Dakota, South Dakota, and Washington. Experience has shown that many serologic laboratories refuse to report names of reactors to the health department until it is required by law or regulation.

The American Medical Association is making VD a national theme for Community Health Week—1971, with suggested dates of October 17-23. Informational and promotional material will be available for medical societies. The AMA publication *PR Doctor*, January 1971, featured the problem of venereal disease, which included reports of excellent programs underway by state medical societies.

The Council encourages the publication of more articles in professional journals on venereal disease and its control for the guidance of the profession. Medical societies are asked to support education of patients and the public through more extensive and imaginative use of all available media and through school curricula.

### The Physician Shortage: Help Now Available!

The federal government now has the authority to expand the US Public Health Service to provide direct medical and other health care services in ghettos and rural areas where there are shortages of physicians and other health personnel.

The HEW Secretary has the responsibility of determining, after consultation with local officials and health groups, what areas need such a program. He then can

*Continued on Page 151*



# RESPIRATORY DISEASE NOTES

Maine Thoracic Society

Medical Section - Maine TB and Health Association

## Talc Pneumoconiosis

Talc has been established as a cause of pneumoconiosis in studies of talc millers and miners. Commercial talc comes from more than ten of our states. Its major uses are in paint, ceramics, roofing, asphalt, dusting powders, insecticides, cosmetics and in the book binding, battery plate and life raft packing industries. It is agreed that sustained inhalation of talc dust can produce pneumoconiosis. Most of earlier reported cases were far advanced and most pathological studies were made post-mortem. This article concerns the rare successful treatment of an early documented case. In years past, the only treatment was removal of the patient from the occupational environment.

### CASE REPORT

A 31-year-old Negro woman with symptoms of progressive cough and shortness of breath gave a history of daily exposure to aerosol powder, while performing her job as a quality control inspector in a cosmetic factory. Aerosol cans were inspected by the contents being sprayed into the air. Exposure time was about two years. Positive findings on physical exam disclosed only wheezes and rales bilaterally over both lung fields. Vital capacity was 38% of predicted. Chest x-ray disclosed diffuse reticular densities and hazy nodules throughout. Open lung biopsy was done. The microscopic picture was that of talc granuloma and confirmed at the Mt. Sinai disease laboratory in New York.

The patient was treated with tapered doses of Prednisone for a year. Vital capacity improved and 18 months later the chest x-ray showed remarkable clearing. Following treatment she was asymptomatic.

Talc is largely hydrated magnesium silicate and accessory minerals. It is not known which component is responsible for the disease. The signs and symptoms are common to other pneumoconioses: dyspnea, productive cough and weakness are predominant. Physical signs are not diagnostic. Cor pulmonale is the major complication and most frequent cause of death.

Diffuse haziness is the earliest x-ray abnormality. As the condition progresses, soft nodules appear; in advanced stages mid and lower lung field confluent fibrosis appears. Ventilatory function tests are of a restrictive type initially, with impairment of diffusion in advanced cases. The microscopic picture demonstrates foreign body granulomata, and doubly refractile bodies compatible with talc. X-ray diffraction of the mineral residue produced by "ashing" of the wet lung will prove the substance to be talc.

This case, with a normal chest x-ray 6 years prior to onset of her illness, and without any prior chronic lung disease, demonstrates the efficacy of modern drug treatment when instituted early in the process, and the ability of Prednisone to reverse much of the pathologic process.

**Editors note:** A documented case of talc pneumoconiosis, far advanced, was detected in the Augusta area in 1967 by the undersigned. The patient enjoyed the odor of a household scouring compound, and "sniffed" it daily for 3 years. She has since expired from cor pulmonale.

Submitted by Robert L. Callahan, M.D., Augusta, Maine.

Ref.: Talc Pneumoconiosis: A Treated Case, Moskowitz, Robert L., Chest 48: 37, 1970.

# Maine Heart Association Notes



20 Winter Street, Augusta, Maine

## Congenital Heart Disease in Children

SIDNEY BLUMENTHAL, M.D. and MARY JANE JESSE, M.D.\*

The physician rendering primary care has a significant role to play in the management of children with congenital heart disease. He decides when a child should be referred to a pediatric cardiologist or center for definitive diagnostic tests and reviews their recommendations with the parents in order to implement an optimal therapeutic regimen. This necessitates a background of basic physiology and the diagnostic features of the common congenital cardiac lesions, as well as current knowledge of the natural history and results of surgical intervention. His role should be active rather than passive.

The most common lesions seen in older children include ventricular and atrial septal defects, (VSD, ASD) patent ductus arteriosus (PDA) pulmonic stenosis with intact septum, tetralogy of Fallot, coarctation of the aorta and aortic stenosis. More complicated lesions are rare, and management has usually begun in infancy.

It is convenient to categorize patients into severity groups dependent upon the natural history and results of surgery; e.g. mild (excellent prognosis, surgery not required), moderate (expert opinions differ, surgery dependent upon evaluation of patient's general status), severe (surgery definitely indicated), inoperable (surgical mortality unacceptable).

Some lesions result in an increased volume of blood presented to the ventricle resulting in "volume work" (VSD, ASD, PDA) while in others, the ventricle must perform increased "pressure" work to overcome resistance (pulmonic or aortic stenosis, coarctation of aorta, left to right shunts complicated by pulmonary vascular obstructive disease).

### VENTRICULAR SEPTAL DEFECT

Typical findings in VSD include a thrill in the fourth left interspace and a loud, rough, holosystolic murmur in that area. The natural history of this defect varies with the severity of the hemodynamic abnormality. The clinical course is dependent on the magnitude of pulmonary blood flow and reactivity of the pulmonary vascular bed. The severity of the defects are classified in Table I.

Indications for early cardiac catheterization are exercise intolerance, cardiac enlargement, congestive

TABLE 1

*Ventricular Septal Defects  
Severity Classification*

	Qp/Qs	Pp/Ps
MILD	<1.5	<0.5
MODERATE	1.4-2.2	<0.5
SEVERE	>2.2	>0.5
INOPERABLE	<1.5	1.0

Qp = Pulmonary Blood Flow

Qs = Systemic Blood Flow

Pp = Pulmonary Artery Pressure

Ps = Systemic Blood Pressure

heart failure, or evidence of right ventricular enlargement. If none of these problems is present, diagnostic studies are done electively after five years of age. Surgery is curative unless the defect is incompletely closed, or heart block is induced.

### ATRIAL SEPTAL DEFECT

Classical findings in atrial septal defect are a parasternal impact, an ejection systolic murmur at the second left interspace, a widely split fixed  $S_2$ , and ECG evidence of right ventricular enlargement or rR' pattern in the right precordial leads with roentgen evidence of cardiomegaly and increased pulmonary vascular markings. Surgery is indicated unless the defect is very small and the ratio of pulmonic to systemic blood flow is less than 1.5, or severe pulmonary vascular obstruction has resulted in a right to left shunt with cyanosis. Surgical mortality in operable patients is less than one percent, and the result is curative.

### PATENT DUCTUS ARTERIOSUS

Patent ductus arteriosus is characterized by a crescendo systolic-decrescendo diastolic machinery murmur. Cardiac catheterization is indicated only if the murmur is atypical, or there is evidence of right ventricular enlargement. Surgery is indicated in symptomatic children and, electively, in all patients at about four years of age. Operative mortality is less than one percent. Correction is contraindicated if there is cyanosis due to a right-to-left shunt.

### PULMONIC STENOSIS

The findings in pulmonic stenosis include a thrill and a rough ejection systolic murmur in the second left interspace. The lesion is characterized as mild, if the peak systolic gradient from right ventricle to pul-

\*Department of Pediatrics, University of Miami.

Prepared by the Maine Heart Association for this Journal.



monary artery is less than 50 mm. Hg., and severe, if the peak systolic gradient is greater than 80 mm. Hg. Gradients from 50 to 80 mm. Hg. are classified as being moderate. Cardiac catheterization is performed electively after five years of age and earlier if there is clinically detectable cyanosis, cardiac enlargement or ECG evidence of increasing RVE. If RV "strain" pattern is present, diagnostic study is mandatory as an emergency procedure. Operative mortality is less than one percent, and surgical correction relieves the obstruction.

#### AORTIC STENOSIS

Congenital aortic stenosis results in a thrill and ejection systolic murmur in the second right intercostal space. The obstruction may be valvar, subvalvar or supra-valvar. Severe obstruction may cause angina, syncope, electrocardiographic evidence of left ventricular strain, and even sudden death. Unfortunately, severe pressure loads on the left ventricle may occur without evidence of symptoms, abnormal ECG or chest film. Indications for diagnostic study are urgent if the clinical diagnosis is clear, and angina, syncope, cardiomegaly or a left ventricular "strain" pattern are present. In the asymptomatic child with a typical murmur and thrill, elective catheterization is indicated after five years of age.

Severity is judged as mild when the peak systolic gradient from left ventricle to aorta is less than 65 mm. Hg.; severe, when the peak systolic gradient is greater than 80 mm. Hg., or LV "strain" pattern is present. A moderate category includes those with gradients between 65 and 80 mm. Hg., and without an ECG "strain" pattern.

The operation is essentially palliative. Residual aortic stenosis is not uncommon, and late calcific aortic stenosis is common. Aortic insufficiency is not a rare complication, but if mild, may be tolerated well through childhood and adolescence. Ultimate valve replacement may be necessary.

#### COARCTATION OF THE AORTA

Coarctation of the aorta is diagnosed on clinical grounds, by the presence of a differential in blood pressure between the upper and lower extremities. Cardiac catheterization is not indicated unless there is a complicating lesion. Indication for early surgery is the presence of severe hypertension, or ECG evidence of left ventricular enlargement. Otherwise, correction should be performed electively between six and twelve years of age. The result is curative.

#### TETRALOGY OF FALLOT

Tetralogy of Fallot is characterized by a large ventricular septal defect and varying degrees of right ventricular outflow obstruction resulting in RV pressures at or near systemic levels and cyanosis due to right-to-left shunting through the septal defect. The outstanding symptom is decreased exercise tolerance. Sudden decreases in arterial oxygen saturation result in hypoxic spells (increased cyanosis, irritability, and air hunger) and may be lethal. Cardiac catheterization to delineate the anatomy is indicated in all patients in whom surgery is contemplated. Two types of surgical approach are available: palliative shunting procedures, or intracardiac repair with closure of the septal defect and relief of outflow tract obstruction.

If the patient is severely symptomatic before the age of five years, a shunting procedure is indicated. Intracardiac repair is indicated in the severely symptomatic child over five years of age, and electively after eight years of age. Palliative shunting procedures in children over five years of age have a low mortality rate and those with good results usually remain satisfactory for 5-10 years. Intracardiac repair has been associated with a diminishing mortality rate that is now 7 to 10 percent in many large centers. The long term results are most promising. Five and ten-year follow-ups have been excellent in those in whom adequate repair has been achieved.

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#### ACROSS THE DESK — *Continued from Page 148*

assign PHS personnel there, after receiving a request from a state or local health agency or other public or non-profit private health organization and a certification of need from the state and local medical society.

The success of the act depends on the vigor with which it is implemented and students can play a direct role in its successful implementation, as they did in securing its passage. Specifically, students can stimulate this activity by:

#### 1. INFORMING LOCAL GROUPS, HEALTH

AGENCIES OR PRIVATE HEALTH ORGANIZATIONS OF THE ACT.

2. ENCOURAGING THESE LOCAL GROUPS TO REQUEST PERSONNEL FROM THE SECRETARY OF HEW.

3. SECURING AN ACCOMPANYING CERTIFICATION OF NEED FROM THE MEDICAL SOCIETY.

4. SENDING COPIES OF ALL CORRESPONDENCE TO THE APPROPRIATE CONGRESSMEN.  
— *The Pulse*, Vol. 7, No. 6, May 3, 1971.



## —News From Blue Cross and Blue Shield—



### A Utilization Review Program That Really Works

A great deal has been written lately of the need for effective utilization review, but few existing programs can show much yet in the way of measurable results. An exception is the hospital-sponsored program at Wilmington (Delaware) Medical Center. There, in the first year of operation, the average length of stay dropped from 8.4 to 8.1 days while percent of occupancy rose from 84 percent to 87 percent.

The concept is simple. Each patient admitted to one of the center institutions gets his hospital bed in accordance with his admitting classification (emergency, urgent or elective). Upon admission, his physician must provide the hospital with his admitting diagnosis and presumed method of treatment (medical or surgical). Based on diagnosis and expected treatment, the hospital assigns the patient a number of "pre-approved days" of hospitalization.

For example, an admitting diagnosis of appendicitis might carry eight pre-approved days, a figure based on national averages. If a longer stay becomes necessary, the patient's physician must fill out a recertification form, giving the reason for the longer stay and listing the extra number of days he expects his patient to need hospitalization. The first and second hospitalization extensions are limited to half the original pre-approved days — so in the hypothetical case of the appendicitis patient, maximum extensions would be only four days. Once a hospital stay comes to twice the days approved at admission time, it is classed as a "stay of extended duration" and must be reviewed by at least one utilization review committee member. This third extension can never exceed 30 days. Medicare and Medicaid patients can be assigned no more than 12 initial hospitalization days, no matter what the admitting diagnosis, treatment or method. Eight to ten percent of the center's patients require at least one extension on their length of stay, reports Hartman.

"Having to admit patients by diagnosis and treatment — rather than symptoms — was a shock to many of our physicians," Hartman admits. "For the first year, there was tremendous staff resistance to the program, but now it's generally accepted by all but a few." It seemed heavy-handed to them, but now they recognize that it can take them off-the-hook in a case where relatives are insisting on continued hospitali-

zation for a patient who doesn't need it.

The Wilmington Medical Center consists of a 465-bed hospital, a 350-bed hospital, a 285-bed hospital and a 60-bed convalescent hospital. The center also has utilization review programs for home care and extended care patients. For home care, each patient's review schedule is established by his physician and the center's home care staff. The physician draws up a specific home treatment plan and must recertify it, if needed, at least every 60 days. ECF patients, like the hospital patients, receive pre-approved days of stay, based on their admitting diagnosis. Here again, Medicare and Medicaid patients can have no more than 12 days for initial assignments. Provisions for extensions work the same as in the hospital review program.

Richard K. Hartman, administrator of one of the four hospitals, summed up the success of the program by saying, "At Wilmington Medical Center we're making beds available without building them." And a spokesman from Wilmington Blue Cross adds: "While other member hospitals' average lengths of stay have increased, the Center's average length of stay has decreased, thus saving our subscribers' money."

How does all of this apply to our situation here in Maine? Most importantly, hospital utilization review committees might want to set up programs similar to that of Wilmington Medical Center using *local* length of stay averages derived from Blue Cross Data Service figures. BCDS data collection is now under way in several Maine hospitals.

Home care and Extended Care Facility programs are now possibilities in Maine too. The Blue Cross and Blue Shield Coordinated Home Health Care Program, now available to interested Home Health Agencies, is designed to enable some patients to be discharged earlier than usual from health care facilities, recuperate at home, and eliminate the need for hospitalization. And a second Extended Care Facility has now been added to our pilot program to cover ECF care.

These are some of the ways we at Maine Blue Cross and Blue Shield are trying to control utilization. We welcome dialogue with all concerned parties on this important subject.



## County Society Notes

### WASHINGTON

The regular meeting of the Washington County Medical Society was held at the Peabody Memorial Library in Eastport, Maine on March 29, 1971 with eight members present.

The meeting opened under the direction of Dr. G. Bernard Shaw of Machias, Maine, President of the County Society.

The minutes of the last meeting were read and approved.

Discussion of fee schedules: It was reiterated that the Society was using the California Relative Value Schedules, with a factor of five, with some members using the factor of six.

Dr. Nelson W. Stott of Eastport, Maine introduced a discussion regarding Medical Licensure in the State of Maine of non-Canadian and non-European Medical School graduates. This was brought to the attention of the Councilor, Dr. James C. Bates, Eastport, Maine, who will present it to the next Council meeting.

Dr. Donald M. Robertson, Milbridge, Maine discussed the current status of the MIC Program. At a meeting of the committee, consisting of Dr. Donald Robertson, the convenor, plus Dr. G. Bernard Shaw and Dr. Nelson W. Stott, they had gone over the MIC Program and had set up a plan that they hoped would be successful. The medical aspects of the plan were presented to the Society by Dr. Donald Robertson with members discussing the various aspects of the plan as set up by the committee. It was moved and seconded that the report of the committee be accepted as read. This was approved.

The next meeting of the Society will be at Jasper's Restaurant, Ellsworth, Maine at 6:30 p.m., April 14, 1971 in conjunction with the Hancock County Medical Society to discuss MIC Program. The President, Dr. Charles R. Glassmire of Portland, Maine is expected to attend this meeting.

KARL V. LARSON, M.D., *Secretary*

### KNOX

The monthly meeting of the Knox County Medical Society was held at the Sail Loft in Rockport, Maine on April 13, 1971 with 18 members attending. Also present were Niles L. Perkins, M.D., Mr. Jeff Ackor, and Mr. Dick Sawyer of Augusta. The minutes of the March meeting were read and accepted.

The principal action taken was the formation of Penobscot Bay Medical Associates, Inc., a non-profit corporation composed of all those members of the Knox County Medical Society who wish to participate. The primary purpose of the Corporation is to provide a legal organization for negotiation and provision of medical services for the proposed Ambulatory Care Unit of the Penobscot Bay Medical Center. It is anticipated that other functions of a medical foundation, such as utilization and peer review, may follow.

The Articles of Incorporation were signed by the new Board of Directors: Henry O. White, M.D., President; Paul J. Killoran, M.D., Vice-President; Onni C. Kangas, M.D., Treasurer. Members of the Board are Robert C. Britt, M.D., Harry G. Tounge, Jr., M.D., Robert H. Eddy, M.D., Peter H. Holz, M.D., Robert S. Furman, M.D., and Oram R. Lawry, Jr., M.D. Richard G. Sawyer, Esq., of Augusta is Clerk.

Bylaws, previously approved by the Board of Directors, were presented and approved by vote of the Society.

Dr. Britt described the formation of the Family Planning Clinic under the auspices of the Penobscot Bay Medical Center which will open on April 19, 1971.

Dr. White reported that Dr. Hanley called and stressed the importance of contacting our local senator regarding the bill in the Maine legislature concerning the chiropractors and their attempt to treat Workmen's Compensation cases. All physicians should contact Senator Hoffes.

There being no further business, the meeting was adjourned.

WILLIAM E. NUESSE, M.D., *Secretary*

### HANCOCK

The 433rd meeting of the Hancock County Medical Society was held jointly with the Washington County Medical Society at Jasper's Restaurant in Ellsworth, Maine on April 14, 1971, with 11 members locally and 5 members of the neighboring county attending. Among the 6 guests were 5 wives of members, Dr. Marguerite C. Dunham and Dr. Charles R. Glassmire, President of the Maine Medical Association. Remarks for the good of the order were heard from Dr. Glassmire with appreciation.

The Delegates' report of the April 4 interim meeting of the Maine Medical Association House of Delegates was heard from Dr. Eliot T. Stadler. The 45-page report of the Maternal and Infant Care Proposal of the Hancock and Washington County joint committee was presented by Dr. Donald M. Robertson. A large majority vote by the two-county membership approved the proposal for forwarding to the Children's Bureau of the Federal Government for consideration after a motion to table the proposal did not carry.

The meeting was adjourned at 10:30 p.m.

BRADLEY E. BROWNLOW, M.D., *Secretary*

### CUMBERLAND

The 360th meeting of the Cumberland County Medical Society was held at the Holiday Inn in Portland, Maine on April 15, 1971. There were 165 members and wives in attendance. A lively social hour was held from 6:00 to 7:15 p.m. and this was followed by a resplendent roast beef dinner. Music for dining and dancing was provided by the President, Dr. Lawrence Crane.

Dr. William Walsh, our guest speaker, having missed plane connections, was rescued from Boston via a chartered plane by Dr. Clement A. Hiebert and arrived dinnerless in time to address the group at 9:00 p.m. Dr. Walsh, reminiscing about his earlier visit to Maine in 1961 when Project Hope was an infant, discussed the current undertakings of the Hope. He reviewed the Hope's involvement in Jamaica and Trinidad, and its reason for being there; and also the Hope's experiment in American affairs in its two trial areas of Laredo, Texas and an Indian reservation in Arizona. It was indeed a pleasant evening and challenging to see and hear from the man who was the impetus and the creative architect of the Project Hope.

Following Dr. Walsh's talk, the meeting was adjourned by President Crane.

DOUGLAS R. HILL, M.D., *Secretary*

### LINCOLN-SAGADAHOC

A regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on April 20, 1971.

The meeting was called to order at 8:40 p.m. by the President, Dr. Frank O. Avantaggio, Jr. The minutes of the last meeting were read and accepted as read.

Dr. Bostwick announced that Dr. Alexander G. Stetkevych called up and wished to continue his membership; he reported his new address. His reinstatement was accepted contingent upon his dues payment.

Dr. Alfred T. Holt spoke on malpractice insurance, and possible plans for a case review board.

Dr. Samuel L. Belknap introduced LCDR Charles C. Morrison, MC, USN, currently stationed at the Brunswick Naval Air Station.

Dr. Anthony J. Keating introduced Dr. Irving J. Poliner of Portland and Yale University, who spoke about fiberoptics and automotive repairs, and resulting peptic ulcers and colonic polyp.

GEORGE W. BOSTWICK, M.D., *Secretary*



## Letters to the Editor

To the Editor:

I should like to support the general thesis of Dr. Drane's article on "Drug Abuse: The Need for Professional Cooperation," that appeared in the April issue of *The Journal*.

However, I should like to respond to a quotation of mine that "we are five years behind some of the pressures regarding drug abuse in the larger cities."

I recall this was my impression of the "drug scene" in the fall of 1969. At that remote period in history we in Maine had not, as yet, experienced the heavy influx of drug users and we had little, if any, evidence of the use of opiate derivatives in the State.

Unfortunately we were not able to isolate ourselves from many of the social and psychologic forces (both good and ill) which have beset our nation. Thus, if we are able to be compared with the urban situation at all, I find that in the spring of 1971 we have caught up with the "five year" lag, and in some instances we have surpassed our metropolitan countrymen.

The analysis of the complex issue of drug abuse cannot be divorced from the many, often rapidly changing, issues that beset our society. These include national, economic, social, ethnic, familial and other forces which often dazzle the observer and too often promote controversy where voice is intended.

Congratulations to Dr. Drane in his article.

THADDEUS KOSTRUBALA, M.D.

Director, Division of Community Psychiatry,  
Maine Medical Center, Portland, Maine 04102

To the Editor:

The 1976 Bicentennial Celebration will commemorate the 200th Anniversary of the founding of our Nation. Various activities throughout the United States will focus on important past, present, and future activities. A major theme will most probably evolve around the "Quality of Life" of which health is a major component. Planning for '76 health activities has been underway in a number of communities (including Philadelphia which may well become a major celebration site) and in government. Considerations are being given for the development of model and submodel systems and demonstrations, especially those related to improving health services. Dr. Roger O. Egeberg, the Assistant Secretary for Health and Scientific Affairs, recognizing the importance of providing visibility for health related activities for the Bicentennial Celebration has requested that Dr. Vernon Wilson, Administrator of the Health Services and Mental Health Administration, establish a 1976 Federal Health Activities Coordinating Unit to cooperate with other agencies, institutions, associations, foundations, industry and individuals, and coordinate governmental activities with exposition sites and other special health activities throughout the United States.

Fully recognizing that all Americans should have the opportunity to contribute to the '76 health activities, the following suggestions and requests have been brought forward which should be of interest to you and your readers:

1. That all American medical journals have a special *January 1976* edition, "Bicentennial Edition," which will summarize both past and present activities of special interest to its readers and conjectures and recommendations of needed future research, services and training.
2. That some emphasis be given in the "Bicentennial Edition" to historical aspects of medicine, particularly in the United States and that of special subject interest to its readers.
3. That a listing be made of special health related activities that will be held throughout the United States in 1976.
4. That wherever possible, special person to person hospitality programs be established between your readers and other health related persons not only from the United States, but also with visitors from other countries.

5. That provisions be made by your Journal to adequately refer suggestions from your readers regarding national or local activities that they recommend, hopefully as detailed as possible.

6. That your Journal will encourage the development of special demonstrations and projects by its readers and that they be given the proper visibility by your Journal.

7. That the professional associations which generally relate to your Journal develop special professional meetings highlighting important past, present, and future health related activities.

8. That from now until 1976, your Journal will serve as a platform perhaps through a special "76 Column" giving your readers the opportunity to make their suggestions and wishes felt and statements of their intended participation.

Hopefully by following the above suggestions as many persons as possible will have the opportunity to be heard and to participate. We would appreciate learning from you or your readers about any special model systems, subsystems, special demonstrations, or other programs that should be given national or regional visibility either through the communication media, at major expositions and/or at a "Model Medical City." Other suggestions would be welcomed. We will do our utmost to cooperate, keep you informed, and advise you of any recommendations we receive regarding your areas of interest or the availability of any resources in the future.

Sincerely yours,

FRANK R. MARK, M.D.

'76 Fed. Health Activities Coord., HSMHA  
Room 11-A-05  
5600 Fishers Lane  
Rockville, Maryland 20852

To the Editor:

As one would expect, Doctor Thomas Martin, Sr., made some perceptive and telling observations in his presidential address (to the Mercy Hospital Staff) reproduced in your May issue. Any physician might profit from reading his comments. We could use more Tommy Martins to help us keep our perspective.

One small correction for accuracy's sake: to my knowledge the first Maine full-time staffing of an emergency room by a group of private physicians devoting themselves solely to this activity began on July 1, 1970 with the establishment at the Central Maine General Hospital of our Department of Emergency Medicine.

STANLEY E. HERRICK, JR., M.D.  
Director of Medical Services,  
Central Maine General Hospital,  
Lewiston, Maine 04240

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# The Journal of the Maine Medical Association

Volume Sixty-two

Brunswick, Maine, July 1971

Number 7

## Bladder-Containing Hernia

MEYER EMANUEL, M.D.\* and TILBERT R. M. GYORGY, M.D.\*\*

Under the inhibition of a loose convention that dictates that only exotic, new, or a very rare set of clinical circumstances are worthy of a case report, we were reluctant to cite this case of a large vesical inguinal hernia. We overcame this deterrent in the conviction that a well-recognized and established entity can have attention directed to it with some benefit.

In our experience at Togus, at least two other cases can be recalled which were recognized only at operation, both were of small size. One required only reduction and repair of the hernia, the other required closure of an accidentally perforated bladder. Both made uneventful recoveries. It is probable that anyone who has repaired many hernias has at some time encountered at least a small vesical herniation. Statistically the incidence is stated to be between one and three percent and at least one writer felt that ten percent was nearer the truth since many are not recognized. It may be suspected on reports by the patient of "two-stage" voiding followed by reduction in the size of the inguinal mass after voiding. Some patients report a mild degree of urinary irritability. Generally, however, the discovery is made at the time of the operation. It is most common in men; in women it is of the femoral type. Bladder in hernias have been found in infants and children. Bladder-containing hernias are described as peritoneal, extraperitoneal, and paraperitoneal depending on the relationship to and the amount of peritoneal membrane covering on the bladder mass. Incarceration may occur; intestine or omentum of course may be included in the sac. Very rarely vesical hernias have been known to occur in ventral areas and in the obturator foramen.

Our patient was a 66-year-old male, very obese, and complaining of a bulge in the left groin which was more



Fig. 1. Cystogram showing extension of bladder into hernial sac.

prominent when there was a desire to void. Many years before on separate occasions he had had an appendectomy, a right herniorrhaphy, and removal of glands from the left groin area for an unknown indication. There was no pain or significant discomfort. Surprisingly, considering his age, there was nocturia only of one time at the most and no difficulty in voiding.

When examined, the patient had already voided with a fairly good stream. The testes were somewhat small but otherwise normal. The left inguinal area at the site of a

\*Chief, Genitourinary Section, Surgical Service, Veterans Administration Center, Togus, Maine 04330.

\*\*Assistant Chief, Surgical Service, Veterans Administration Center, Togus, Maine 04330.

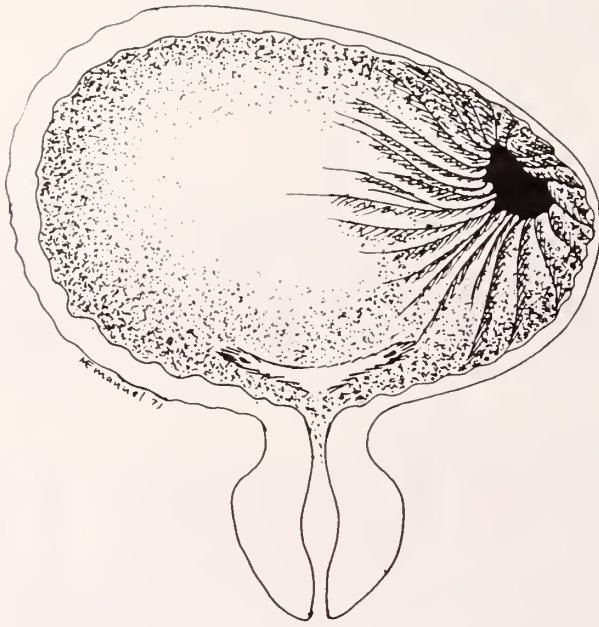


Fig. 2. Interpretation of cystoscopic finding. A funnelled aperture was seen on the right (patient's left). While not typical, a diverticulum could not be ruled out.

possible hernia felt moderately distended when compared to the right. A distinct hernial impulse on straining was not felt on palpation but with coughing there was a suggestive movement beneath the fingers. A catheter entered the bladder easily; there was no residual urine. At this point, a bladder-containing hernial sac could not be diagnosed clearly but was definitely suspected.

Cystography was carried out using excretion urography medium diluted in saline and introduced by catheter. The patient was put in the exaggerated Fowler's position, close to 60°. The inguinal bulge became distinctly larger (Fig. 1 shows the dramatic finding). Cystoscopy was carried out. On the left side of the bladder could be seen a gradual funnelling to a stoma which while not typical suggested a diverticulum. Despite many maneuvers with the panendoscope and cystoscope no further definition of this aperture could be made (Fig. 2).

Operation consisted first of exploration of the bladder via a transverse suprapubic incision in the anticipation of a possible need to excise a diverticulum from the hernia. None was found. About one-third of the bladder structure covered by its own peritoneum was observed to have slid into the large hernial sac. Other contents included retroperitoneal fatty tissue. Division of minor adhesions within the sac released the bladder (Fig. 3 shows an interpretation of the operative findings). The bladder was closed and drained suprapubically with a Pezzer tube. The hernial sac then was trimmed, closed, and the defect repaired.

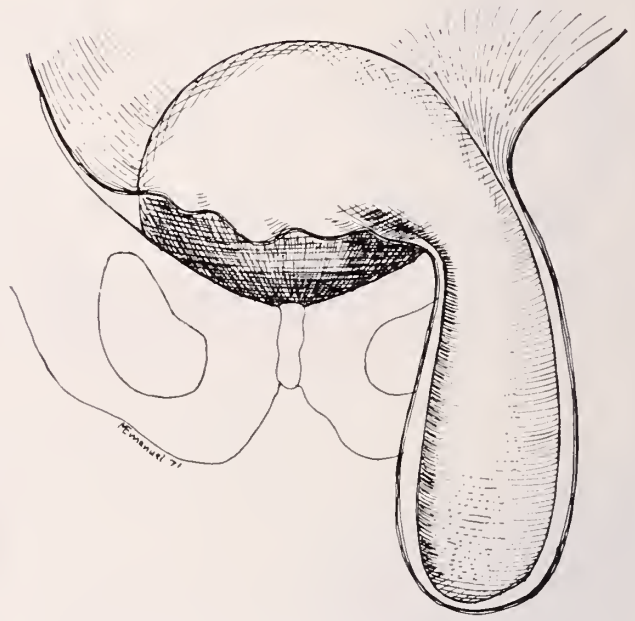


Fig. 3. Interpretation of findings at operation. A large portion of the urinary bladder covered with peritoneum was within the hernial sac.

When the suprapubic tube was removed, temporary urethral catheter drainage was maintained for some days to accelerate closure of the fistula. When the catheter ultimately was removed, the patient voided again without residual urine.

#### SUMMARY

There is nothing new about finding a portion of the urinary bladder within a hernia. They have been described as early as 1363. The vast number of hernias repaired daily warrant anticipation by the operator of an occasional one involving bladder. This particular case is reported because of its impressive dimensions, the fact that it was suspected on clinical grounds and confirmed by cystography and cystoscopy before operation. Open for conclusion at operation was the question of whether the hernia contained simply bladder or a diverticulum. The former was true.

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# Chronic Respiratory Insufficiency

## A Case Report

HOWARD H. MILLIKEN, M.D.\*

### INTRODUCTION

Airway obstruction in its various forms is on the increase in Maine as in the nation. The commonest causes of airway obstruction are emphysema, chronic bronchitis, and asthma. Prior to 1950, the study of chronic respiratory disease was restricted almost entirely to pulmonary tuberculosis. As tuberculosis was brought under control, other chronic respiratory diseases emerged as new challenges. As acute respiratory problems responded to antibiotics, physicians became increasingly aware of the disability that chronic respiratory diseases could cause.

At the present time in the United States, the death rate from pulmonary emphysema has increased faster than that of lung cancer. From 1958 to 1967, the reported deaths from emphysema in the U. S. increased about 160% among persons 25 years of age and older.<sup>1</sup> Some of the increase may represent an increasing awareness of the disease by physicians and/or better diagnostic facilities. However, the evidence indicates that the increase in deaths resulted from a real increase in frequency and severity of the disease. More than 10,000 Americans die of emphysema every year and many dying from other causes have associated emphysema as a contributory cause of death.

Maine has a high incidence of emphysema and chronic bronchitis. Death from emphysema and chronic bronchitis in Maine from 1958 to 1967 increased 315% as opposed to the national increase of 181%. A higher percentage of Maine workers retired prematurely in 1966 because of emphysema than was true nationally.

The large increase in total lives lost between 1965 and 1966 in Maine was from emphysema.<sup>2</sup>

Because of the increasing frequency of this disease, the following case is presented. He is no doubt one of the above statistics. He was disabled in 1965.

### CASE REPORT

This 50-year-old veteran came to Togus for the first time in February 1964 at the age of 43. The patient had been a welder by trade. His chief complaint at that time was increasing shortness of breath. He had smoked a package of cigarettes a day since he was a boy but had stopped smoking in the latter part of 1963 and had not smoked since. He had developed a chronic cough at the age of 23 and over the years the cough had increased in frequency and intensity. By the time of admission in 1964, the cough was present throughout most of each day and did not vary with the seasons. It was productive of moderate amounts of yellowish sputum. Wheezing had been present intermittently for over 10 years and for the past 5 years there was definite aggravation of cough, shortness of breath, and wheezing. He had been

skin tested and told that he was allergic to dust. He had had pneumonia in November of 1963 and in January of 1964. The patient's past history was otherwise non-contributory.

On physical examination, the chest was markedly emphysematous with flaring of the costal margins and marked limitation of chest expansion bilaterally. There were scattered bilateral wheezes and rhonchi present on inspiration and expiration.

Laboratory examination of three sputum specimens failed to show any pathogenic organisms. The white blood count was normal except for six eosinophils.

X-ray of the chest showed pulmonary emphysema, pulmonary fibrosis, and raised the question of associated bronchiectasis or bronchitis.

Electrocardiogram was within normal limits with sinus tachycardia, right axis deviation, and clockwise rotation.

Pulmonary function tests showed severe obstruction and moderate restrictive ventilatory impairment. Vital capacity was 61% of the predicted with the first second vital capacity 32% of the predicted.

During his hospital course, the patient was treated with bronchodilators, tetracycline, and IPPB with some relief. He was discharged in an improved condition.

At this point, it was concluded that the patient had all of the major components of airway obstruction, namely elements of chronic bronchitis, pulmonary emphysema, and asthma. In addition to this, it was felt he probably had pulmonary fibrosis and bronchiectasis.

The second admission to Togus was in June 1964, because of broncho-pneumonia in both lower lobes. He was treated with bronchodilators, IPPB, and tetracycline. He was discharged after five days considerably improved.

His third Togus admission commenced Dec. 1, 1964, was his third admission in one year, and was due to pneumonitis superimposed on chronic airway obstruction. On Dec. 2, 1964, a tracheostomy was performed because of respiratory insufficiency. This was done on an emergency basis. On Dec. 3, 1964, the patient had a PaCO<sub>2</sub> of 56 done by the Astrup method. PaO<sub>2</sub> and O<sub>2</sub> saturation was not done at that time. The patient was not ventilated on this occasion but manifested some confusion and forgetfulness and irritability consistent with respiratory acidosis. By the end of two weeks, the patient's breathing and color was improved considerably. He had been treated with Mucomyst® (2.0 cc.) and Isuprel® (0.25 cc.) by compressor into the tracheostomy tube, tetracycline, Coly-mycin® and bronchodilators. The tracheostomy tube was removed Dec. 22, 1964. The patient made a poor response with the tube removed. By Jan. 6, 1965, the patient had developed recurrent pneumonitis. He was treated with chloramphenicol, 500 mg. every 8 hours, plus streptomycin and steroids, prednisone, 15 mg. every 8 hours.

On Jan. 14, 1965, the patient required a second tracheostomy and was treated with assisted ventilation in the U-cyclic unit with the ventilation rate at about 15 per minute with respirator pressure at 18 cm. of negative pressure.

The second tracheostomy was required because of recurrent pneumonitis plus the use of nasal oxygen at 4 liters for one half hour b.i.d. He had tolerated this level of oxygen for one week until pneumonitis spread. Medication during assisted ventilation included oxygen at 6 liters, Coly-mycin 150 mg. every 12 hours, streptomycin 1 Gm. b.i.d., Tedral® t.i.d., rectal aminophylline 0.5 Gm. every 12 hours, prednisone 15 mg. every 12 hours.

The patient improved in the U-cyclic unit. He was removed

\*Staff Physician, Veterans Administration Center, Togus, Maine 04330.





Fig. 1a



Fig. 1b

Fig. 1a and b: Lateral chest x-ray taken June 10, 1969, and P-A view taken March 1, 1971, showing typical hyperinflation of lungfields, increased fibrotic markings, depressed diaphragm, and increased A-P diameter of thorax.

on Jan. 18, 1965, after three days of assisted ventilation. He tolerated one liter of nasal oxygen while out of the U-cyclic unit. By Jan. 20, 1965, the patient was alert and could subtract serial sevens. He gradually improved over the next two months and his tracheostomy tube was removed for the second time on March 2, 1965. He was discharged March 4, 1965, on prednisone 5 mg. b.i.d., Tedral 1 tablet t.i.d., Elkosin® 1 Gm. q.i.d., saturated solution of potassium iodide 10 drops t.i.d., and Isuprel 8 drops with 40 drops of water to be used in a compressor.

The patient was treated at Togus for 11 days from Oct. 16 to Oct. 27, 1966, because of depressive features of anxiety reaction in addition to his pulmonary problem.

The fourth Togus admission of this patient was in March 1967, when he was hospitalized for 30 days for exacerbation of his pulmonary problem. He was treated with ACTH gel, 20 units b.i.d., for a six-day period with improvement.

The patient was readmitted for his fifth admission on June 28, 1967, and remained through Aug. 23, 1967, because of pulmonary emphysema, severe, associated with mild respiratory acidosis and chronic bronchitis, severe, and pulmonary fibrosis, severe. He was treated with ACTH, prednisone, bronchodilators, IPPB, tetracycline, and Maalox®. There was mild subjective improvement but no objective improvement.

His sixth Togus admission began on Dec. 12, 1967. The patient had a TUR performed using a low spinal anesthesia. At the time, his vital capacity was 2.09 liters, first second vital capacity 0.59 liters, Wright peak flow 195 liters, which was 33% of predicted. He was discharged Feb. 2, 1968.

By June, 1969, on his seventh admission, treatment with a 24% Ventimask® was instituted and the patient was supplied a mask and oxygen to use at home at 4 liters per minute with bronchodilators plus prednisone, 15 mg. daily. The patient remained out of the hospital for the next year and a half until March 1, 1971, when he was admitted for the eighth time with chronic severe pulmonary emphysema with respiratory acidosis. Blood gases on admission while on the Ventimask with 24% oxygen showed the following: pH, 7.35;  $\text{PaCO}_2$ , 96 mm. Hg;  $\text{PaO}_2$ , 25.5 mm. Hg;  $\text{O}_2$  saturation, 45. Initially, it was not felt advisable to ventilate this patient because of his severe long-standing disease. On March 8, 1971, his condition appeared terminal. We reversed our stand and elected to ventilate the patient. He had an endotracheal intubation and was ventilated with marked improvement. His  $\text{PaO}_2$  rose to 100 mm. Hg with  $\text{O}_2$  saturation at 97% with 40% oxygen on the Emerson ventilator. On March 10, 1971, he had his third tracheostomy over the endotracheal tube. This was achieved with some difficulty by virtue of the calcified trachea from previous tracheostomies. On March 16, 1971, the tracheostomy tube plugged and the following date the patient was returned to the operating room where a rubber tracheostomy tube was inserted. Subsequently, this tube became plugged and was removed. By this time, the patient was on 35% Ventimask which he tolerated well. His  $\text{PaO}_2$  could be maintained at 100 mm. Hg and  $\text{O}_2$  saturation was 97%,  $\text{PaCO}_2$  57 mm. Hg, pH 7.43.

On April 10, 1971, the patient was discharged on 35% Ventimask, Elavil® 25 mg. b.i.d., Gitaligin® 0.5 mg. daily, tetracycline 250 mg. q.i.d., prednisone 10 mg. t.i.d., Amesec® b.i.d., Fleets rectal theophylline 0.5 Gm. every 8 hours, and air compressor with 8 drops of Isuprel and 40 drops of saline q.i.d. He felt well but the prognosis is guarded.

#### DISCUSSION

E. J. M. Campbell<sup>3</sup> in 1967 discussed the management of acute respiratory failure in chronic bronchitis and emphysema. His first tenet was that small increases in inspired oxygen greatly improves oxygenation of blood. He stated that an increase of oxygen concentration by 4 to 7% will double the oxygen supply to the tissue and will avoid ineffective cough, shallow breathing, and deteriora-

tion of the lungs. If the  $\text{PaCO}_2$  does not increase on this regimen, the inspired  $\text{PAO}_2$  may be further increased. This is achieved by the Ventimask 24-28-35%.<sup>4</sup>

His second tenet was that it is better to relieve the hypoxemia all of the time than to abolish the hypoxemia most of the time. Hence, we are committed to long-term oxygenation in severe cases of pulmonary emphysema with the use of a Ventimask.

The fatal complications of acute respiratory failure treated by intubation or tracheostomy and assisted breathing are many. Listed below are those encountered by Asmundsson and Kilburn which resulted in their report on 77 deaths.<sup>5</sup>

#### Ventilatory

- Alkalosis syndrome
- Errors of airway management
- Severe hypercapnia
- Expanding lung cyst
- Oxygen toxicity

#### Infections

- Necrotizing pneumonia  
(with pneumothorax due to abscesses)
- Pneumonia with pulmonary edema

#### Circulatory

- Acute myocardial infarction
- Arrhythmias (ventricular)
- Intractable low cardiac output
- Pulmonary emboli
- Bleeding aortic aneurysm
- Intracranial bleeding

#### Others

- Gastrointestinal bleeding
- Jaundice

Renal failure  
Spinal cord compression

#### SUMMARY

This case represents a six-year survival of a severe respiratory cripple who has withstood three tracheostomies, two assisted ventilations, and now lives at home using a 35% Ventimask with eight liters of oxygen per minute. He feels well but his prognosis is guarded.

Pulmonary disease is expensive in terms of man-hours lost from the job. It is also expensive in terms of medical care. The oxygen alone in this case costs over \$2,000 a year.

#### ACKNOWLEDGMENT

The author wishes to acknowledge with thanks the technical assistance provided by Mr. Herman C. Nitz, Chief of Pulmonary Function Laboratory at Togus.

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# Renal Angiomyolipoma

## A Nosographic Study and Presentation of a Case

JULIO C. ESCOBAR, M.D.\*

### INTRODUCTION

Among the rarer tumors or tumor-like malformations of the kidney is a curious lesion characterized by the presence of fat, blood vessels, and smooth muscle. Although it has been known by a variety of names such as lipomyohemangioma,<sup>1</sup> angioliipoleiomyoma,<sup>2</sup> benign arterioleiomyoma,<sup>3</sup> myoangioliipoma,<sup>4</sup> benign mesenchymoma,<sup>5</sup> and hamartoma,<sup>6</sup> it is most commonly and correctly called an angiomyolipoma.<sup>7</sup> The angiomyolipoma or hamartoma appears to occur in two general forms. There are the small lesions which are frequently multiple, often bilateral, and usually asymptomatic. These are seen more often in younger individuals and have shown that they are more frequently an accompaniment of tuberous sclerosis.<sup>8</sup> It has been pointed out that renal tumors are present in 80 percent of the cases of tuberous sclerosis but these are asymptomatic and rarely diagnosed before autopsy.<sup>9</sup> The other form is the rather large tumors. They are solitary in general, they are not associated with tuberous sclerosis, and occur in the older age group and show a definitive predilection for females. Occurrences of this disease both in America and to a lesser extent in Europe and the first cases concerning colored races was reported by Udekwu.<sup>10</sup> Usually the tumors become symptomatic because of their size alone although occasionally there may be hemorrhage producing pain and shock.<sup>11,12</sup> Hematuria, however, is uncommon.

While the proportions of the different tissues present are highly variable, fat is predominant generally, particularly in the center of the lesion. The renal parenchyma has no genuine adipose tissue and it is considered that the lipomatous elements are derived from the renal capsule. Usually muscular and vascular elements are found also, the former derived from the blood vessels. Because of the combination of these three tissues, the term angiomyolipoma has been considered the best histologic appellation. Etiologically the tumors are considered most likely congenital errors or malformations.<sup>7</sup> Other theories such as a true neoplasia or lipomatous metaplasia seems less tenable. It is important to know that these tumors never become malignant.

### DEFINITION

The hamartomas are congenital malformations. These anomalies are expressed primarily at the histologic level in this group of diseases.<sup>13</sup> There is abnormal tissue organization. Although the individual cells are apparently normal, there may be an absence or deficiency of normal

tissue components or an overgrowth of certain elements. Tissues not ordinarily found in a given area may appear in a malformation.<sup>14,15,16</sup>

This group of lesions is characterized by overgrowth and disarray of normal tissues resulting in tumor-like tissue masses of limited growth potential. The term hamartoma is used to describe more or less discrete tumor-like congenital malformations of tissues. Ordinarily these lesions have only limited growth potential and are best considered as an expression of teratogenic insult to the embryo or fetus. The tissue constituents of a hamartoma, despite their disarray, are indigenous to the site in which they develop. Hamartomas are angiomas and lymphangiomas, congenital neurofibromas, melanotic nevi of skin and certain dysontogenetic processes of the intestine, lung, liver, kidney, and skeleton.

The medullary fibroma and the angiomyolipoma are the types presenting in the kidneys.

Two disease entities are prominent as multiple hamartomatous complexes: Neurofibromatosis (Von Recklinghausen's disease) and tuberous sclerosis. These diseases are heredofamilial. A dominant gene with variable expressivity is held responsible for the syndrome of neurofibromatosis. Tuberous sclerosis is also heredofamilial and presumably is caused by a single dominant gene.<sup>10</sup>

Most abnormalities in the form of any part of the body that are present at birth exist because some episode in the course of development has failed to be accomplished normally. The majority of malformations that affect most parts of the body can be interpreted as intrinsic disturbances in the part affected and are a result of failure.<sup>13</sup>

Embryonic processes responsible for production of congenital defect usually consist of a failure of some embryonic activity. (Some of these are listed below)

<i>Failure</i>	<i>Example</i>
1. To form	Ureteral agenesis
2. To form properly	Malformed external ear
3. To retrogress	Patent duct arteriosus
4. To close	Cleft palate
5. To open	Imperforated anus
6. To remain open	Premature synostosis of skull
7. To unite	Double uterus
8. To divide	Syndactylia
9. To divide properly	Tetralogy of Fallot
10. To differentiate	Wilms' tumor
11. To differentiate properly	Achondroplasia
12. To limit growth	Hemangioma
13. To locate properly	Horsheshoe kidney
14. To attach properly	Cecum mobile

The pathology of malformation consists largely of the absence or alteration in size, shape or location of organs

\*Staff Surgeon, Veterans Administration Center, Togus, Maine 04330.



without specific changes in cellular structure. It is only infrequently that we see derangements in tissue differentiation such as occurs in osteogenesis imperfecta, achondroplasia and congenital tumors (angiomyolipoma). In the metabolic diseases, the fundamental pathology generally consists of the inability of the body to synthesize certain compounds and any changes that may be found in any organs result largely from the fact that the abnormal metabolic processes produce certain substances the body has not learned how to eliminate.

*Genetic Theory:* The most recent concept which is still formative is the genetic factor in these malformations. Many arguments support this as the true explanation of this hamartomatous syndrome of which the following are pertinent.

*Heredity:* Numerous observers have recognized the diseases appearing as a Mendelian dominant.

*Karyotype analysis:* The discovery of the trisomy which has its origin in errors of dysjunction. The latter represent a meiotic malfunction which could account for dysplasia, a defect of tissue combination. Neoplasia however may be locked in a dysplastic tissue, since chromosomal changes can be induced by radiation which in turn induces malignant changes. Thus the problem of nomenclature of kidney tumors found in tuberous sclerosis should not confuse clinicians when malignancies are reported. These tumors do become malignant and should not be called hamartomas since no true hamartoma ever becomes malignant.

#### CLINICAL ASPECT

The symptomatology of hamartomas of the kidney depends on whether or not they are associated with tuberous sclerosis.<sup>17,18</sup> In Bourneville's disease,<sup>19</sup> the clinical diagnosis of the disease can be made if two or more of the following features can be demonstrated: Mental retardation, epilepsy, adenoma sebaceum, phacoma of the retina, multiple mixed tumors (hamartomatous) and family history. In a study of thirty cases that are not associated with Bourneville's disease, Price and Mostofi<sup>20</sup> reported that ten patients presented as acute abdominal emergencies with abrupt onset of severe abdominal pain in the flank or abdomen associated with either a tender, palpable mass or with tenderness without a mass in the kidney region. These clinical findings, especially when combined with radiological evidence of a renal tumor, may be taken as strong suggestive evidence that the patient has an angiomyolipoma of the kidney and if at surgery bleeding is encountered either in the peritoneal cavity or in the retroperitoneum or if an extensively hemorrhagic renal tumor is found, the diagnosis of angiomyolipoma may be suspected. The clinical picture of renal colic was seen in eight patients with intermittent and recurrent episodes of pain associated with gross hematuria in four. In the remainder, the symptoms were more variable and less severe and they simulated the clinical picture of renal cell carcinoma or renal infection. Spontaneous rupture of a hamartoma of the kidney is an extremely rare condition.

Only a few cases have been reported. They can have a history of recent or remote trauma. The importance of bleeding, either into the perineal tissue or into the substance of the angiomyolipoma, in the pathogenesis of the clinical symptoms has been stressed as very important. The fact that these tumors are prone to bleed is not surprising in view of the structure of the tumors. They are highly vascular and the blood vessels within the tumor are abnormal. The degree of vascularity and the structural rigidity, inelasticity and tortuosity of the blood vessels of these tumors are factors that predispose the tumor to hemorrhage.<sup>17,21,22</sup>

#### RADIOLOGY

Angiomyolipomas have practically never been diagnosed accurately preoperatively since roentgenographic findings are rarely pathognomonic. Some authors have pointed out that high fat content of the tumors may cause radiolucency to be seen within the mass. The preoperative diagnosis once was suggested by MacDougall.<sup>21</sup> The radiological appearance of an angiomyolipoma is of a mass in the kidney and signs suggesting the presence of fatty tissue within the mass. The intravenous pyelogram shows a mass in the kidney, displacing the collecting system. A nephrotomogram demonstrates a lesion to be ill-defined, however, it is sharply delineated from adjacent normal kidney structure. The mass appears in part to be radiolucent. Selective renal angiography in several cases of angiomyolipoma<sup>10,21,23,24,25,26,27,28</sup> revealed the main renal artery to be of normal caliber. The artery which supplies the tumor is markedly dilated, circuitous and aneurysmal, with abnormal tortuous side branches. There are multiple thin tortuous vessels within the mass. The aneurysmal part of the artery which supplies the tumor retains the contrast media for more than nine seconds. There was premature visualization of the veins in the area of the tumor. These veins retain the contrast material beyond the time of maximum filling of the renal vein. During the venous phase, a whorled appearance produced by vessels in the mass resembles the appearance seen in myoma of the uterus. The surface veins appear to circumscribe the mass. These findings may serve to differentiate angiomyolipomas from hypernephromas. The apparent changes are: (1) The principal artery supplying the lesion is dilated, tortuous and multisacculated with many tortuous irregular dilated branches, lacking normal tapering. The sacculations retain the contrast medium well into the venous phase. (2) The venous phase shows a whorled "onion peel" appearance presumably related to the myomatous tissue present. (3) Lucent areas in the nephrogram representing fatty elements are relatively well-defined, unlike those produced by necrotic areas in hypernephroma. (4) The appearances of hypernephroma in all phases of angiography are more bizarre than seen in the angiomyolipoma.

#### GROSS PATHOLOGY AND HISTOPATHOLOGY

These angiomyolipomas consisted in masses of yellow-



Fig. 1. Flat plate of abdomen showing a diffuse opacity in the right hemiabdomen, homogeneous, with no visualization of liver, kidney and right psoas muscle shadows. The stomach and colon are displaced to the left.

gray tumor mass, greasy, lobulated, resembling fat but firmer in consistency and more friable than normal fatty tissue, non-encapsulated. The line of demarcation between the renal parenchyma and the tumor was ill-defined and there was apparent gross infiltration of the kidney but clearly demarcated from adjacent normal renal substance. In places, there was a very narrow zone of compressed renal tissue separating the two and sometimes large areas of fresh hemorrhage and necrosis were found. The color yellow or gray depends on whether they are mostly lipomatous or leiomatous.

Microscopically the tumors are composed of adipose tissue, smooth muscle, blood vessels and a supporting stroma of connective tissue. The organization of the components varied from case to case.

The adipose tissue consisted in uniform appearance of fat cells having a large central lipoid vacuole and a peripheral small nucleus, although sometimes this adult type of adipose tissue appears in places as fat cells with vacuoles and central nuclei.

The interstices contained delicate reticular fibrils and sometimes a few muscle cells, occurring singly or in small groups.

In contrast to the uniform appearance of the fat cell, variation in the size and shape of the smooth muscle cells



Fig. 2. Retrograde pyelogram showing distortion, deformation and displacement of the renal pelvis and calyceal system. The upper half of the right ureter was displaced to the left of the lumbar spine.

were frequent. These cells ranged from large, plump cells to an elongated cell having a typical cigar-shaped nucleus and longitudinal cytoplasm myofibrils. The nuclei of the smooth muscle cells were often hyperchromatic but only few mitotic figures were found. Such mitoses appeared normal. Mononuclear giant cells were common and multinucleated giant cells were not unusual. Despite these variations in histologic appearance most of the nuclei appeared benign. The arrangement and organization of the smooth muscle cells varied from the presence of small groups of the interstices of the adipose tissue to perivascular cuffs and to large sheets having the typical histologic appearance of leiomyoma.

The vascular component of these tumors displayed great variability in type, size, arrangement, and structure. Capillaries and sinusoidal vessels were frequent. In addition, arterioles small to moderate-sized muscular arteries and large thick-walled arterial vessels were found.

The structure of the capillaries and sinusoids were essentially normal. The arterioles and small arteries contained a centrally placed lumen with an endothelial lining. The wall of these vessels lacked elastic tissue but were composed of closely packed immature-appearing smooth muscle cells, generally arranged circumferentially.





Fig. 3. The retroperitoneum shows a good infiltration of gas surrounding the left kidney and also contrast material in the pelvis and calyces of the left kidney show them to be normal. On the right side, the gas reveals a mass occupying the right hemiabdomen with areas of translucency in the lower and middle portion. The pelvis and calyces are distorted and displaced upward.

The major vascular component of these tumors consisted of large arterial type vessels, were extremely tortuous, often producing a pattern reminiscent of that seen in a cirroid aneurysm. The lumina showed a wide variation in diameter and frequently were placed eccentrically and were of variable thickness. The media, likewise, varied in thickness and in structure from vessel to vessel and even from one area to another in the same vessel. In some, this layer consisted of smooth muscle, in others it contained both smooth muscle and collagenous connective tissue, while in still others only collagenous connective tissue, often hyalinized, and without any demonstrable smooth muscle was found. The majority of these larger vessels were devoid of elastic tissue, however elastic fibers could be found in at least some of the vessels, such fibers usually being located in larger vessels at the periphery of the tumor. The elastic fibers, when present, were frayed or reduplicated. Vessels having a well-formed elastic membrane were found occasionally, nearly always situated at the periphery of the tumor.

With hematoxylin and eosin stains, clear demarcation appeared between the tumor and the adjacent renal parenchyma. With reticulin stains, however, the stroma of the tumor was seen to merge with that of the renal parenchyma. In no instance was there invasion of renal parenchyma.

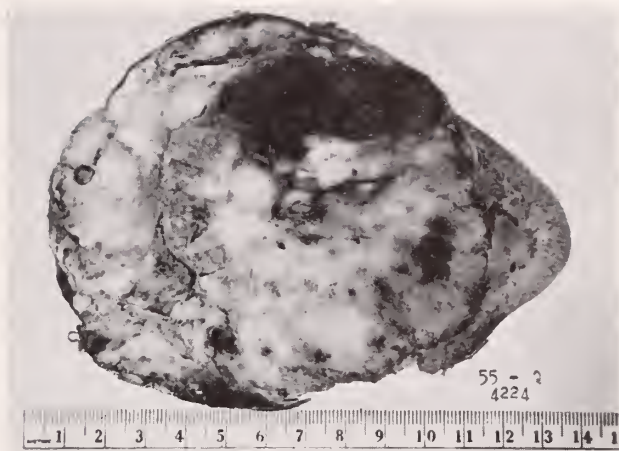


Fig. 4. Macroscopic examination shows a tumor occupying the lower pole of the kidney, irregular in surface, ill-defined, with yellow greasy areas, gray firm tissue and foci of hemorrhages. The consistency of the tumor was firm. Its heterogeneous macroscopic section almost permits making the diagnosis of angio-myolipoma. The kidney parenchyma was pushed to the upper portion but the configuration was normal.

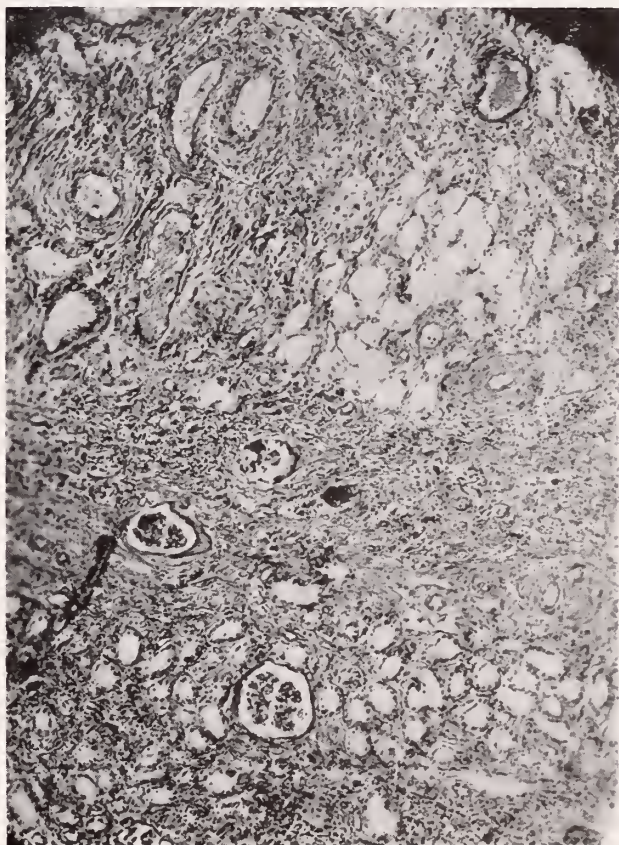


Fig. 5. The line of demarcation between the renal parenchyma and the tumor is shown. The zone of compression and atrophy of the renal parenchyma adjacent to the tumor is a result of the pressure of the tumor over the kidney. There is atrophy of glomeruli and tubules and inflammatory cells are present.



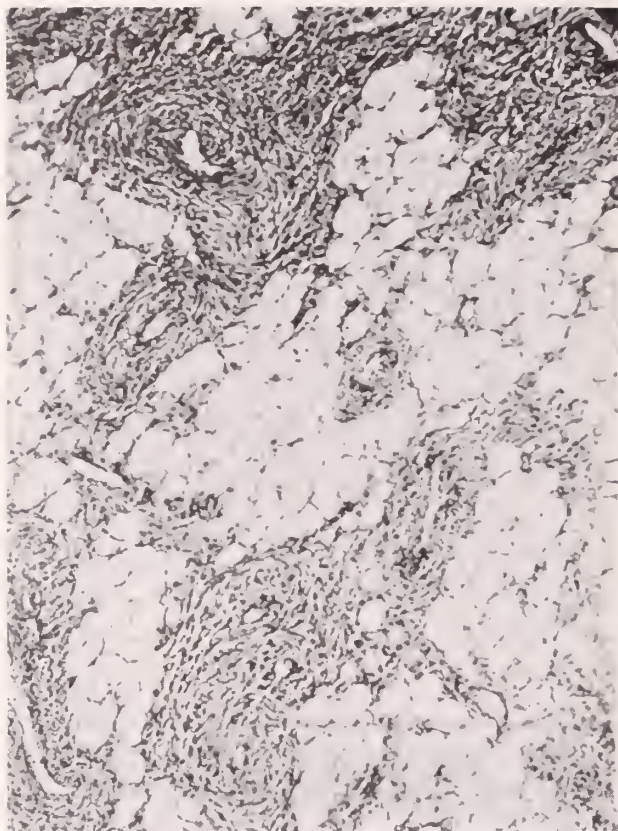


Fig. 6. Microscopic examination shows one of the main components of this tumor which is the adipose tissue supported by a stroma of connective tissues. The fat cells are mature and there are smooth muscle fibers surrounding the blood vessels. The smooth muscle appears to come from the arteries. (Arterio-genetic theory of the smooth muscle of these tumors.)

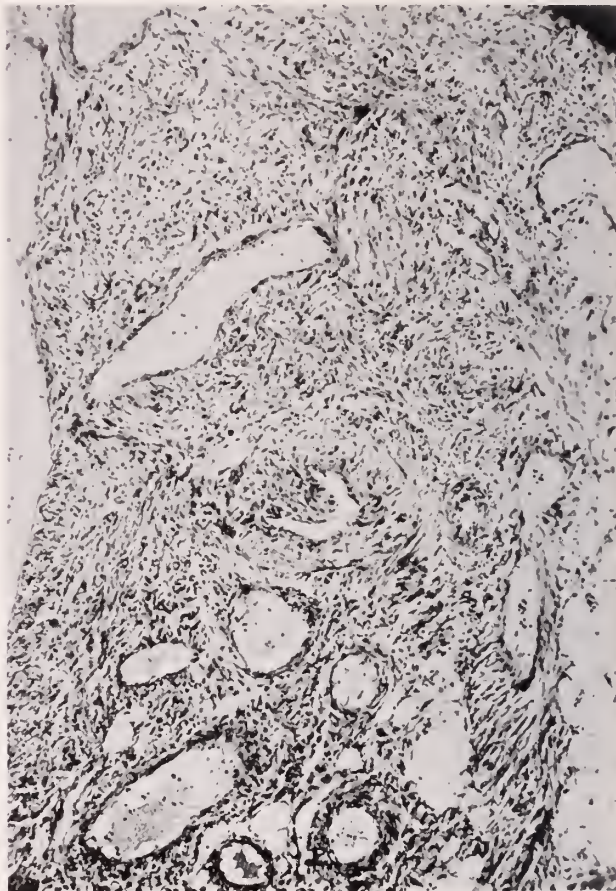


Fig. 7

ma, blood vessels, or perirenal tissues. In some cases, there was a variable zone of compression atrophy of the renal parenchyma adjacent to the tumor, often infiltrated by chronic inflammatory cells. Occasionally persisting renal tubules and rarely atrophy or partly atrophic glomeruli were found at the margins or in the extreme periphery of a tumor. Some of these tubules dilated to form small microcysts but large cysts were not found.<sup>7,22,29,30,31,32,33,34,35,36,37</sup>

#### CASE REPORT

VTS, a 20-year-old woman, was admitted to the Women's General Hospital of Lima, Peru, on 4/23/55 because of fever (38.4° C., 101.2° F.) and an abdominal mass in the right hemiabdomen. The fever started suddenly three days prior to admission.

Physical examination was essentially negative except for an abdominal mass in the right hemiabdomen, firm in consistency, non-tender on palpation, which did not move with respirations. Past history and family history were non-contributory. Laboratory studies disclosed the following values: WBC, 12,800; hemoglobin, 7.93 Gm. %; hematocrit, 27.5%; urinalysis showed a trace of albumin, numerous epithelial cells, 1-5 WBC, 5-10 RBC; Papanicolaou test of urine, negative; Gram stain of urine revealed Gram-positive cocci; no acid-fast bacilli were found. Chest x-ray was negative. A flat plate of the abdomen showed diffuse opacity, homogeneous in the right hemiabdomen with

no visualization of the liver, kidney, or right psoas muscle shadows. The stomach and colon were displaced to the left side and down. The left kidney shadow was normal in size, shape, and position. An I-V pyelogram revealed good elimination in both kidneys with normal left side but the right kidney was deformed, dilated, elongated in the calyces with deformation and displacement of the middle and lower calyces upward and to the left as well as the renal pelvis. Retrograde pyelogram showed shadows of the right calyces and renal pelvis which were dilated, deformed and displaced upward and to the left. The upper half of the right ureter was displaced entirely to the left of midline. The retroperitoneum showed a good infiltration of gas in the left side surrounding the left kidney which was of a normal aspect. On the right side, the gas incompletely surrounded the right kidney which was larger and deformed in its lower 3/4, round in shape, surpassing the midline. There was an insufficiency of gas in the external portion.

With the diagnosis of tumor of the right kidney, the patient was prepared for surgery, taken to the operating room, and a right nephrectomy was done on 4/18/55. A mass in the lower pole of the right kidney was found. The postoperative course was uneventful and the patient was discharged on the twelfth postoperative day. The patient was followed up for two years with no evidence of recurrence of the tumor.

Macroscopic examination of the right kidney showed a mass 24x16x14 cm. in size with an irregular surface, nodular, and firm in consistency. Cut section of the tumor showed a mass in the lower pole of the kidney, round, and 13 cm. in diameter, heterogeneous in aspect with yellow fatty areas alternating with cystic areas containing blood clots. The renal parenchyma was displaced and reduced to a cap of this tumor. Microscopic ex-

*Continued on Page 167*



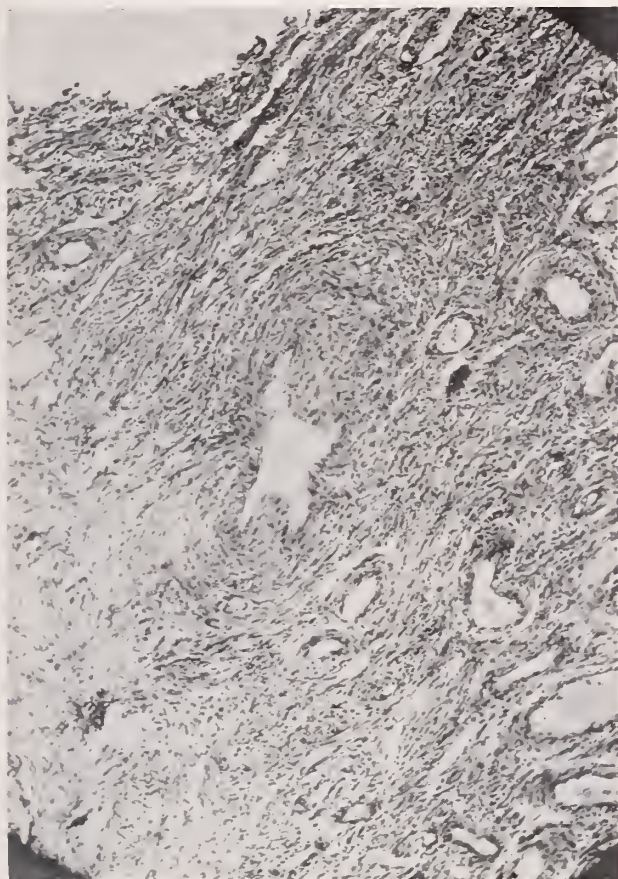


Fig. 8

amination showed a mixture of mature adipose tissue with fibers of smooth muscle and arteries and veins. The pathological diagnosis was angiomyolipoma of the right kidney.

No evidence of association with tuberous sclerosis was found in this patient. This is the first case of an angiomyolipoma of the kidney reported from Peru.

#### DISCUSSION

A rare congenital disorder characterized pathologically by sclerotic masses in the cerebral cortex, adenoma sebaceum, and tumors in various organs, and clinically by mental deficiency and epilepsy was described in 1880-1881 by Bourneville and Brissaud.<sup>19</sup> Albrecht<sup>6</sup> in 1904 studied these tumors describing them as "tumor-like malformations in which there is only abnormal mixing of the normal components of the organ in which they occur," and gave them the name of hamartomas, from the Greek hamartia which means defect, or hamartenein which means err. He added that the faulty mixing may be manifested as a change in quantity, arrangement, or degree of maturation, or may comprise all three. This literally means a nodule of superfluous tissue resulting from a defect in tissue combination during development. Since then many researchers have added new concepts to the definition of hamartomas, causing the word hamartoma to become vague, and the line of demarcation between these tumors, choristomas, and teratomas has become blurred.<sup>38,39</sup> Tweeddale and associates<sup>2</sup> gave conflicting

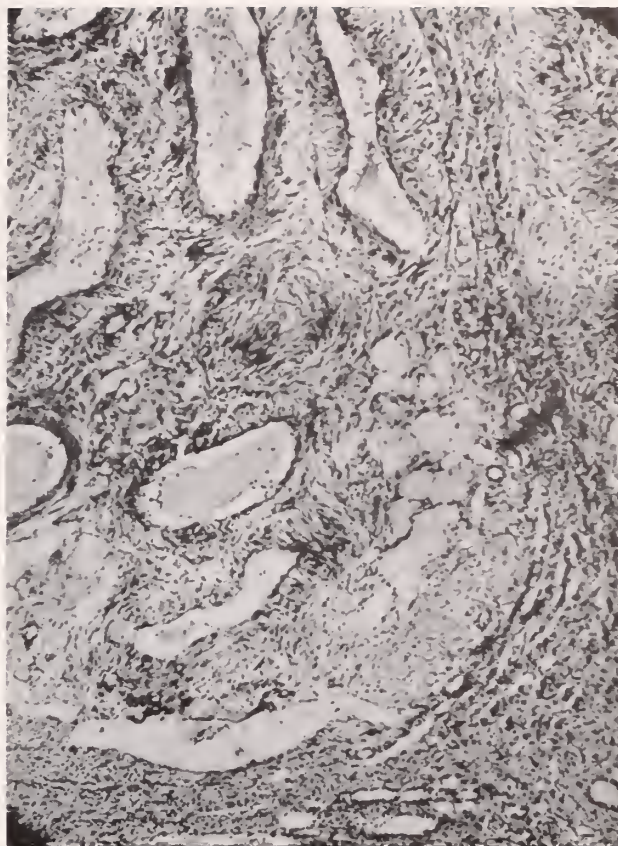


Fig. 9

Fig. 7, 8, and 9. The vascular components of these tumors are shown. There is a cystic hemorrhagic formation containing clots from recent bleeding. The vascular components are of a great variety in type, shape, arrangement, and structure from capillaries and sinusoidal vessels to small, moderate size, and large arteries of muscular type. The arterioles lack elastic tissue but they are dense and of immature appearing smooth muscle. The large vessels are extremely tortuous like cirroid aneurysms. The lumen show a wide variation in diameter. The smooth muscle is always present and gives to this tumor a gray firm appearance. The arrangement and organization is variable and gives the appearance of a leiomyoma.

opinions that have kept many pathologists interested in this subject.

The three main propositions of Albrecht are: (1) Hamartomas are tumor-like malformations; (2) hamartomas are made up only of the normal components of an organ, (3) hamartomas show faulty mixing of these components as to quantity, arrangement, and degree of maturation. The first proposition is basically correct but can be and has been challenged. Actually the hamartoma "straddles a line between malformation and tumor in that the malformed tissue sometimes exhibits tumorous qualities."<sup>40</sup>

The second proposition is also correct. However, much misunderstanding has arisen concerning the word "normal." For example the "normal" components of an organ, as for example the connective tissue of the kidney, may in turn be abnormal and contain foci of embryonic cells



of pluripotent "reserve" cells capable of differentiation in several directions at any period of mature life. These foci may be composed of unripe connective tissue cells or mesenchymal cells which are capable of differentiation into fat tissue, smooth muscle, elastic tissue, fibrous tissue and blood vessels, all known components of the classical renal hamartoma.

The third proposition is more complex and needs clarification. It embodies "change in quantity, arrangement and degree of maturation." However, modern pathological studies have shown that some so-called adenomas or medullary renal fibromas, many renal leiomyomas,<sup>3,41</sup> lipomas,<sup>29,42,43</sup> renal hemangiomas,<sup>44,45,46</sup> lymphangiomas,<sup>5</sup> and certain epithelial tumors of the renal pelvis<sup>47</sup> uncontestedly have a hamartial origin. The evidence of unilateral growth in a given hamartoma should be accepted. Nonetheless, a great number of hamartomas are "mixed tumors" or "complex tumors" because they are composed of a mixture of tissues. We prefer to use the word "complex" instead of "mixed" which should be reserved for those instances when tissues from different germ layers are involved. Concerning the degree of maturation, the very nature of the hamartoma implies the existence of "germ cells" or embryonic "rests." In many published cases of renal hamartomas, typical immature cells were seen. The degree of maturity or immaturity of the entire tumor and its clinical behavior will indicate whether or not it is a hamartoma.

The renal hamartoma is related also to the Wilms' tumor of children and the rare "mixed tumor" of "mixed hypernephroid tumor" of adults<sup>48</sup> and Allen<sup>7</sup> stated that these tumors belong to one large group whether they are called embryoma, carcinosarcoma, nephroblastoma, mixed tumor, mixed hypernephroid tumor, or Wilms' tumor. They are all mesodermal tumors and contain only indigenous renal tissues and their embryologic or metaplastic derivatives. On that basis, one could classify them as mesodermal hamartoblastomas, younger more immature and consequently more malignant than their mesenchymal counterparts. Also, Wilms' tumor has been found associated with aniridia and associated defects,<sup>49</sup> congenital hemihypertrophy, pigmented nevi and hemangiomas, hypospadias and cryptorchidism, other urinary tract anomalies, and other congenital defects: a primary rhabdomyosarcoma of the anal sphincter, bilateral deafness and skeletal deformities, multiple neurofibromatosis, marked retardation of mental and bone age, hypotonia, cryptorchidism and an extra chromosome in the E group, presumably trisomy 18, breast hypertrophy at 18 months of age and congenital spherocytic anemia. Family histories of Wilms' tumor and other neoplasms in children were not uniformly complete. One case of Wilms' tumor affecting identical twin girls was observed. In another family three first cousins, two of them brothers, were reported to have Wilms' tumor.

Recognition of the excessive concurrence of certain congenital defects with Wilms' tumor provides an opportunity to examine the etiology of the tumor in the

light of what is known of the congenital malformations. Some authors considered Wilms' tumor a malignant variety of hamartoma.<sup>7,22,48</sup>

#### SUMMARY

One case of renal angiomyolipoma is presented as the first case ever reported from Peru. Over 150 cases of renal angiomyolipoma not associated with tuberous sclerosis have been reported<sup>50</sup> and several cases of kidney hamartoma associated with tuberous sclerosis have been reported. Tuberous sclerosis is a rare disease. At a London hospital for mental defectives, 16 cases were diagnosed out of 2,412 cases admitted in 11 years.<sup>10</sup> A review of the literature in this fascinating complex disease starting with its classification as a malformation expressed at the histologic level in this group of diseases,<sup>13,14</sup> as a reaction to injury or as a dysontogenetic tumor and its close relation with genetic factors in these malformations has been made as well as a review of the clinical aspect depending on its association to Bourneville-Brissaud's disease or presenting as an angiomyolipoma of the kidney which in the second case never has been diagnosed before surgery but during an operative procedure the diagnosis of angiomyolipoma may be suspected.<sup>17,20</sup> We have reviewed also the radiologic aspect with the new reports of selective renal arteriography and nephrotomograms. They have made it possible to make the diagnosis of a renal mass which can be differentiated from a malignant tumor.<sup>23,24,26</sup> However, the arteriogram is not foolproof in establishing the diagnosis of this tumor. A review of the gross pathology and histopathology is presented as well as the historic review of the literature which still is in pursuit of many unresolved problems of this interesting and fascinating complex which is associating with many more new hamartomatous malformations, angiohamartomas, hemangiomas and related vascular malformations, multifocal angiomas which occur in distinct patterns or syndromes (Rendu-Osler-Weber disease, Sturge-Weber's disease, Lindau-Von Hippel disease<sup>15</sup>), lymphangiomas which most frequently occur in the deep tissues of the neck, axilla, tongue, lips, mediastinum, mesentery, and retroperitoneum, or diffuse lymphangiomatous transformation of an extremity. Milroy's disease for example is a congenital hereditary lymphangiectatic edema of the lower extremities resembling elephantiasis. In addition to these local diseases, deep-seated involvement may be encountered in bone (Ollier's disease and Maffucci's syndrome), lung, or in multiple sites.<sup>51</sup> Visceral hamartomas have been found in the liver, lungs, kidneys, and intestinal tract. The intestines display at least two types of hamartomas. The first is the common juvenile polyps of the colon or congenital cystic hamartoma. Secondly, there is a Peutz-Jeghers syndrome characterized by intestinal polyposis associated with melanin spots in and around the mouth or elsewhere on the facial skin,<sup>52</sup> melanotic nevi of the skin, the banal pigmented moles, and nevi of the skin as examples of hamartomas of the skin.

In conclusion, a historic review<sup>53,54,55,56,57,58,59,60</sup> of the



literature and the many theories about the etiology and histogenesis has been outlined but still many exciting concepts are extant in the field of the development of malformations and many studies of the development, pathobiology, and ultrastructure features of this disease should contribute to the understanding of its pathogenesis.

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## *—News From Blue Cross and Blue Shield—*



### **National Health Insurance: Statement of National Association of Blue Shield Plans**

On April 28, 1971, Ned F. Parish, executive vice president of the National Association of Blue Shield Plans, appeared before the Senate Finance Committee to present Blue Shield's view on the broad issues involved in considering proposals for national health insurance.

Parish stressed that an assessment should be made of what is working and what is not working in the current delivery and financing of health care. He asserted that Blue Shield Plans, for example, have made "a major contribution to the nation's well-being." There is strong reason to believe, he said, that there is much that is right about health care financing in this country and that the need for health financing is reasonably well met for a majority of the population.

Currently, Parish said, there is strong interest in prepaid group practice as a delivery form that will reduce costs by emphasizing preventive care and ambulatory care. Blue Shield Plans (including Maine's) are currently involved in the development of a number of such practices and are keeping a sharp eye on the comparative cost of this form of delivery. A number of Blue Shield Plans are also working with and studying the experience of "free-standing facilities." These are facilities which can accommodate operations requiring general anesthesia without placing the patient in the hospital. Parish stressed, however, that any such proposals for altering the delivery of care ought to be thoroughly tested — as to public acceptability and cost saving — before being implemented on a broad scale.

Turning to the question of cost containment, Parish stressed that the best available tool is utilization review, including peer review. "While most health insurance organizations now recognize the importance of meaningful utilization and peer review," he said, "Blue Shield more than ten years ago decided that one of our most important subscriber services was to establish mechanisms to maintain controls over the use of contracts and benefits." Effective utilization review and its documentation are now Membership Standards for all Blue Shield Plans.

In two areas Parish acknowledged the desirability of government-assisted financing: catastrophic illness and coverage for the poor.

In regard to coverage for catastrophic illness, Parish pointed to the Federal Employees Supplemental Blue Cross and Blue Shield coverage as a model of an excellent "major medical" type policy. He recommended, however, that serious thought be given to the limits of private prepayment and health insurance in protecting individuals who fall victim to catastrophic, chronic illness. He suggested that the Federal government be called upon to reinsure private carriers for the "uninsurable" costs of chronic illness. "Though government financed," he said, "the programs should be administered by the carriers, who would be in the best position to supplement private benefits when the basic and supplemental coverage leaves off and the uninsurable catastrophic, chronic costs begin." The effectiveness of carriers could then be evaluated to determine which best serve the public interest.

The Federal government, according to Parish, must also play a part in helping to provide more effective and more generally available health care programs for the poor and the medically indigent. Again, he stressed that the best approach would be an underwritten program using private carriers. The official Blue Shield position nationally is that the poor and medically indigent should be able to purchase the same health care benefits broadly available to the general public. The alternative, said Parish, is a separate government-administered system with the attending problems of duplication of costs, lack of integration, and the implication — accurate or not — of separate standards of quality.

Finally, Parish proposed that a national council on health policy be established to develop and submit to the President a statement of national health priorities along with a legislative program to achieve these objectives. He emphasized that such an approach would maximize the chances of an orderly process of innovation and development.



# Maine Heart Association Notes

20 Winter Street, Augusta, Maine



## Extracorporeal Circulation — Part I

ROBERT S. LITWAK, M.D.\*

The single most important advance in the surgical management of heart disease has been the development of practical methods of performing direct vision operations within the heart using temporary extracorporeal circulation. Clinical success with such a method was first accomplished in 1953 by Dr. John H. Gibbon, Jr. who had spent the preceding 16 years developing physiologic concepts and equipment to achieve a goal which all but a few thought impossible. With proper utilization of existing equipment, a well executed operation and thoughtful postoperative care, an imposing list of cardiac abnormalities may be corrected in an unhurried fashion with considerable certainty that the patient will recover and be improved. Permissible periods of total cardiopulmonary bypass presently approximate 4 hours although the vast majority of intracardiac operations are completed in less than half this time.

### EQUIPMENT AND METHODS

Temporary cardiopulmonary bypass is conducted with a variety of extracorporeal circuits all of which possess (1) a means of pumping blood with minimal turbulence and (2) a device for gas exchange of venous blood withdrawn from the patient so that oxygen and carbon dioxide tensions reflect those normally observed in pulmonary venous blood.

The most commonly used pump consists of one or two rotating rollers which compress a tube so that the contained blood is gently forced out. The output of these roller pumps is continuous and relatively non-pulsatile.

Three gas exchange mechanisms ("oxygenators") are in current use. Dispersion of oxygen bubbles in blood with subsequent defoaming (bubble oxygenators) and surface filming of blood on either a series of stationary vertical sheets or rotating discs in an oxygen rich environment are presently the two most commonly employed systems because of simplicity and, in the first instance, the availability of cheap disposable units. The third type, a membrane "oxygenator" closely stimulates conditions found in the natural lung by interposing thin gas-permeable membranes between the blood and an oxygen rich atmosphere. This system minimizes protein denatu-

ration which has been shown to be a consequence of the large blood-gas interface present when other "oxygenators" are used. Although early models were cumbersome and relatively inefficient, recent modifications have made these units increasingly practical for daily clinical use.

In practice, the heart-lung machine is usually primed with a mixture of heparinized blood and crystalloidal solution (hemodilution). Although conclusive data are lacking, clinical experience suggests that the diluted perfusate is advantageous because its lower viscosity improves tissue perfusion and diminishes blood trauma. The patient's blood is rendered incoagulable with heparin and cannulae are inserted into the venae cavae or right heart for diversion of venous blood into the extracorporeal apparatus. Return of oxygenated perfusate to the patient is accomplished with a cannula placed in the arterial circuit, frequently the ascending arch of aorta or a more peripheral vessel such as the iliac or femoral artery. At the onset of bypass, only a portion of the total venous return is diverted into the apparatus. This period of partial perfusion is used to check all portions of the circuit before definitive cardiac surgery is commenced. Total cardiopulmonary bypass is achieved by tightening snares around the caval cannulae and the intracardiac surgery is begun. Intracardiac blood of coronary and bronchial circulation is gently aspirated into the apparatus, defoamed and returned to the patient. When the aortic valve is competent, the perfusion pressure provided by the apparatus maintains the valve in a closed position and assures satisfactory blood flow to vital organs. However, when the valve is distinctly incompetent or requires exposure for surgical correction, the ascending aortic arch is occluded, a proximal aortotomy made and coronary artery cannulation and perfusion carried out. Blood (and therefore body) temperature is controlled by passing the perfusate through a heat exchanger. Moderate hypothermia (30-32°C.) is often used to reduce total body oxygen consumption although recently there has been an increasing tendency to conduct perfusions at normothermic conditions.

### PHYSIOLOGIC REQUIREMENTS AND EFFECTS OF EXTRACORPOREAL CIRCULATION

The essential requirement of temporary extracorporeal circulation is that it satisfactorily replace the heart and lungs for a limited time period. The need

\*From the Department of Surgery (Division of Cardiothoracic Surgery), Mount Sinai School of Medicine, New York, N.Y. 10029.

Prepared by the Maine Heart Association for this Journal.



of the tissues for oxygen and the necessity for removal of carbon dioxide and other metabolites requires that the perfusion rate and gas exchange be sufficient for such purposes. Although basal cardiac output in normal subjects approximates 3.1 L/min/M<sup>2</sup>, it has been found that flow rates of 2.2-2.4 L/min/M<sup>2</sup> are satisfactory for perfusion periods up to 4 hours. With these flow rates, maintenance of mean systemic arterial pressures of 50-70 mm. Hg (in normotensive patients) is generally sufficient to assure satisfactory organ function during and after perfusion although reliable data concerning partition of blood flow to organs during whole body perfusion in man are not yet available.

An intraoperative fall in hematocrit, the consequence of perfusate dilution is well tolerated despite the reduced oxygen carrying capacity of the blood provided that flow rate, perfusion pressure and gas exchange are properly maintained. Systemic arterial oxygen and carbon dioxide tensions must be kept at essentially normal levels (100 and 40 mm.Hg respectively). It is particularly important that hypocarbia be avoided because of its adverse influence on cerebral function.

Stability of the intracellular and extracellular environments requires consideration of need for thera-

py of the reduced buffering capacity of the blood which accompanies significant hemodilution. Incremental infusion of buffers, either sodium bicarbonate or tromethamine, are generally used during perfusion. The latter offers the advantage of a non sodium containing ion which can traverse the cell membrane to provide both intracellular as well as extracellular buffering. Properly conducted whole body perfusion should not be associated with significant alterations in buffer base and hydrogen ion concentration.

Cardiopulmonary bypass is presently associated with alterations in vascular volume, water and electrolyte distribution which may contribute to morbidity and mortality if not properly appreciated. There is a measurable reduction of blood volume and the extracellular water is increased although in the absence of preexisting cardiac or renal failure this may largely be the result of intraoperative fluid administration during and after perfusion. Postoperative urinary excretion of sodium is low and potassium excretion high. Infusion of supplemental potassium (in the absence of oliguria) will normally prevent postperfusion hypokalemia and its attendant danger of cardiac arrhythmias.

*(To be continued in the August issue)*

#### RENAL ANGIOMYOLIPOMA, A Nosographic Study and Presentation of a Case

*Continued from Page 169*

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#### MEDEX-New England Project

The MEDEX-New England Project has been refunded. It is expected that a class of twenty-four students will begin in the late fall. This class will be composed of ex-military corpsmen and, in addition, applications from civilians with previous experience in a medically related field will be entertained.

If you are interested in discussing participation in the Program as a preceptor, please contact before July 20, 1971:

Nicholas Danforth, M.D.  
 Director, MEDEX-New England  
 P.O. Box 146 — Nugget Arcade  
 Hanover, New Hampshire 03755

## County Society Notes

### WASHINGTON

A regular meeting of the Washington County Medical Society was held at the staff room of the Down East Community Hospital, Machias, Maine on May 24, 1971 with eight members present.

The meeting opened at 7:55 p.m. under the direction of Dr. G. Bernard Shaw, President of the Society.

The minutes of the last meeting were read and approved.

Dr. Nelson W. Stott of Eastport, Maine again brought up his resolution in regard to foreign medical graduates and asked that it be presented to the council.

Dr. Shaw reported, as yet they had had no report on the MIC program.

There was considerable discussion on the changes that are proposed at the June meeting in regard to changing the Council to the Executive Committee, and also in regard to election of the nominees for Council plus the re-organization.

Dr. James C. Bates of Eastport, Maine was nominated as our first candidate for a member of the Council; Dr. Donald M. Robertson, Milbridge, Maine nominated as our second candidate as a member of the Council.

The Society voted in favor of the report on the Peer Review Committee as recommended by Dr. Richard P. Laney. The Society also discussed the various amendments to the M.M.A. Constitution and Bylaws as brought up at the Interim Meeting of the House of Delegates held on April 4, 1971.

The meeting adjourned at 9:20 p.m.

KARL V. LARSON, M.D., *Secretary*

### PENOBSCOT

The Penobscot County Medical Society met on March 16, 1971 at the Tarratine Club in Bangor, Maine with the President, Dr. Charles D. McEvoy, Jr., presiding. Approximately 38 members and guests were present.

Guest speaker, Mr. Gene Carter, spoke on professional liability. An active discussion followed.

The minutes of the previous meeting were approved and read.

#### Committees:

Peer Review Committee – announcement of members – Drs. Hans Holzwarth (Chairman), George E. Files, Herbert C. Gilman, Edward C. Porter, Joe R. Wise, Jr. Dr. George W. Wood, III suggested county financial support for expenses for Dr. Holzwarth while attending a Peer Review meeting in Chicago in May, at which time he will be a representative for the State Association. Dr. Otis F. Jillson moved that up to \$100.00 be allocated by the Penobscot County Medical Society for this. This was passed.

#### Communications:

A communication from Drs. Donald M. Robertson and Robert G. MacBride dated February 1, 1971 concerning "proposed changes – organization of the M.M.A." and their conviction of a need for a minority report was presented to the Society. Dr. George O. Chase moved that the Penobscot County Society support Dr. MacBride's proposal. This was passed.

#### Old Business:

It was announced that the results of the mailed poll of the 115 members in response to Dr. Metz's amendment to his recent motion regarding abortion had 39 supporting votes and 27 negative votes. The following amendment to the above amended motion was passed – (delete) "and notification of the endorsement be made available to the appropriate legislature of the State" and substituting "that notification of the endorsement be sent to the State Medical Association." The amended motion had 12 for and 18 against with 5 abstentions. Dr. Chase moved that the Penobscot County Medical Society be on record of disapprov-

ing the M.M.A. legislative committee's recommendation on abortion. This did not pass.

#### New Business:

Dr. Chase moved that a committee be appointed for a resolution in memoriam for Dr. Francis J. Kadi.

The meeting adjourned at 10:20 p.m.

A meeting of the Penobscot County Medical Society was held at Sing's Polynesian Restaurant in Bangor, Maine on April 20, 1971 with the President, Dr. Charles D. McEvoy, Jr., presiding. Approximately 40 members and guests were present.

Guest speaker, Mr. James R. Castle and his associate, Mr. John Casey, discussed the related aspects of professional corporations.

The minutes of the previous meeting were approved as read.

#### Announcements:

The May meeting of the Society will be the annual meeting and the members were asked to consider candidates for the various offices.

Dr. Lloyd Brown was requested to present a resolution in memoriam for Dr. Francis J. Kadi.

#### Report of Delegates by Chairman, Dr. Thornton W. Merriam, Jr.:

The resolution by Hancock County concluding as follows was not supported by the county society – "Be it Resolved that the American Medical Association endorses as its policy to discourage the drug industry from carrying on these activities and encourages the drug industry to reduce promotional activities to simple unembellished information presented to the physician about new products."

Brief note regarding the pending various chiropractic bills especially L.D. 47, L.D. 130 and L.D. 846 was again brought to the attention of the Society. Members were requested to personally contact their senators and representatives relating their opinion on these bills.

The newly proposed council composition and function was presented.

#### Old Business:

None.

#### New Business:

Dr. Merriam presented the following accepted recommendations on drug usage:

Because we recognize that prescription drugs and equipment used by physicians may play an important role in the drug abuse problem, the Penobscot County Medical Association urges its members to observe the following principles:

1. Disposable needles and syringes should be destroyed after use in such a manner that they cannot be reused.
2. Amphetamine drugs should *not* be prescribed for appetite suppression. Amphetamines are one of the *most abused* prescription drugs, and they have been shown to be ineffective in the long term management of obesity.
3. Indiscriminate prescription of pain relievers and sleeping medications should be avoided. These drugs should be prescribed in small quantities only (6-12 tablets), except in unusual circumstances.
4. Prescription blanks should not be stored in rooms in doctors' offices where patients may sit unattended.
5. Pharmacists should be encouraged to stop honoring prescriptions written by physicians who are deceased or who have left town after a period of six months.
6. All prescriptions of drugs which may be abused (tranquilizers, sedatives, hypnotics, belladonna-containing drugs, pain relievers), and which are not covered by existing

## COUNTY SOCIETY OFFICERS

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President, Charles W. Steele, M.D., Lewiston  
Secretary, Donald L. Anderson, M.D., Lewiston

## AROOSTOOK

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Secretary, George J. Harrison, M.D., Houlton

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Secretary, Hays G. Bowne, M.D., Farmington

## HANCOCK

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Secretary, Francis A. Spellman, M.D., Togus

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Secretary, George W. Bostwick, M.D., Newcastle

## OXFORD

President, Peter B. Aucoin, M.D., Rumford  
Secretary, Stephen B. Dewing, M.D., Harrison

## PENOBSCOT

President, John S. Houlihan, M.D., Bangor  
Secretary, Lewis E. Phillips, M.D., Bangor

## PISCATAQUIS

President, Robert C. Cornell, M.D., Greenville  
Secretary, Isaac Nelson, M.D., Greenville

## SOMERSET

President, Vincente L. Sy, M.D., Bingham  
Secretary, John H. Steeves, M.D., Skowhegan

## WALDO

President, Norman E. Cobb, M.D., Belfast  
Secretary, Euclid M. Hanbury, Jr., M.D., Belfast

## WASHINGTON

President, George B. Shaw, M.D., Machias  
Secretary, Karl V. Larson, M.D., East Machias

## YORK

President, Harry B. Eisberg, M.D., Biddeford  
Secretary, Charles W. Kinghorn, M.D., Kittery  
Asst. Secretary, Melvin Bacon, M.D., Sanford

laws, should be written to expire automatically after 6 months or 6 refills or less.

The Penobscot County Medical Association further recommends that a joint meeting with the County Pharmaceutical Association be held to consider mutually means by which the opportunities for drug abuse can be reduced.

Dr. Holzwarth, having mentioned a recent Bangor Daily News article regarding venereal disease reporting, motioned that the county society endorse reporting of venereal diseases by name to the appropriate health agency. The motion was tabled.

The Penobscot County Medical Society met on May 18, 1971 at the Tarratine Club in Bangor, Maine with the President, Dr. Charles D. McEvoy, Jr., presiding. Approximately 26 members were present.

The minutes of the previous meeting were approved as read.

*Treasurer's Report:*

The treasurer, Dr. Philip R. Kimball, related that the Society's account has a positive balance and that a detailed report will be forthcoming. It was announced that \$100 was being forwarded to Dr. Hans A. Holzwarth in support of his planned trip regarding a Peer Review meeting in Chicago.

*Committee Report:*

Dr. Holzwarth announced that his Peer Review committee would have a further report in the fall and that he was planning to attend the above meeting.

*Announcements:*

Dr. McEvoy announced that there had been three complaints to the Society regarding the practice of medicine in the community. These were generally and briefly reported by him, having previously been discussed by the executive council.

A resolution in memoriam for Dr. Francis J. Kadi was submitted by Dr. Lloyd Brown.

*Old Business:*

A communication has been received from Dr. John J. Pearson regarding the specific State regulations in regard to the recording of venereal disease. It was noted that GC was to be reported by "name, age, address, stage of disease — except that a number may be substituted for the name and address, if

1. Case is under proper treatment and it is reasonably certain will follow all instructions for treatment and follow-up care;
2. All known contacts are revealed or brought under care;
3. No sexual intercourse with untreated previously infected persons is expected;
4. No public funds are used in the diagnosis or treatment of the disease;
5. A record of name, address, and identifying number is maintained by the attending physician."

*New Business:*

Dr. Thomas L. Watt was admitted to active membership in the Society, being proposed by Drs. Alan W. Boone and George E. Files.

Delegates and alternate delegates were nominated by the executive council and approved by the Society as follows:

Dr. Sidney Chason, Bangor  
Dr. Herbert C. Gilman, Millinocket  
Dr. John S. Houlihan, Bangor  
Dr. Gerald A. Metz, Bangor  
Dr. John J. Pearson, Old Town  
Dr. Robert P. Andrews, Bangor  
Dr. Alan W. Boone, Bangor  
Dr. George O. Chase, Bangor  
Dr. Philip R. Kimball, Bangor  
Dr. Charles D. McEvoy, Jr., Bangor

The nominating committee composed of Drs. Leonard G. Miragliuolo, Lloyd Brown and Edward L. Curran, as appointed by President-elect Dr. John S. Houlihan, proposed the following officers:



President, Dr. John S. Houlihan, Bangor  
 President-elect, Dr. Benjamin L. Shapero, Bangor  
 Secretary, Dr. Lewis E. Phillips, Bangor  
 Treasurer, Dr. Philip R. Kimball, Bangor  
 Councilors, Drs. Thornton W. Merriam, Jr., Bangor (1 yr.),  
 Irvin E. Hamlin, East Millinocket (2 yrs.) and Hadley  
 Parrot, Bangor (3 yrs.)

There were no further nominations and the above were voted into office by the Society.

Drs. Andrews, Merriam, Miragliuolo and Pearson were nominated for the position of councilor for the newly proposed district with the understanding that Piscataquis County has no nominees at this time. Drs. Merriam and Miragliuolo were elected.

The meeting adjourned at 9:15 p.m.

LEWIS E. PHILLIPS, M.D., *Secretary*

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# The Journal of the Maine Medical Association

Volume Sixty-two

Brunswick, Maine, August 1971

Number 8

## Community Hospital Problem-Oriented Medical Care Service\*

FRANCIS J. O'CONNOR, M.D., FACR\*\*

The Maine Institute of Continuing Medical Education (MICME) was established in the Spring of 1968 at the Augusta General Hospital with the approval of the Board of Directors to formalize the Continuing Medical Education Program.

One of the purposes of the MICME is to provide through Continuing Education a quality of health care to all persons in the community. The means to the solution of an increasingly complex problem is through the Problem-Oriented Medical Record (POMR) with the aid of well trained paramedical assistants in a Problem-Oriented Medical Care Service.

The POMR Project is a Continuing Medical Education Project designed to link a University Medical Center, a Maine Community Hospital (the Augusta General Hospital) and a Family General Practice Office, Hampden Highlands, Maine by the POMR, a computer compatible Medical Record System with the goal of providing patients with complete comprehensive care, and the physician with the means of Continuing Medical Education.

A contract with HEW (Health, Education and Welfare HSM# 110-69-420, 1969, 1970, 1971) Rockville, Maryland through Maine's Regional Medical Program provides at the community hospital (AGH) a program to teach the POMR to practicing physicians and paramedics to develop a training program and evaluate the teaching effort.

The POMR approach to comprehensive health care in the community hospital uses a *large data base* to provide a *complete list* of all the patients' problems, requires a treatment plan for all problems and most important a follow-up to insure that *all problems are managed*.

The POMR System of Medicine provides a patient care guidance system and the ultimate Continuing Education

tool for the physician because it is related to patients' care. This comprehensive care approach is preventive medicine at its best and ideally belongs to an ambulatory care setting.

The POMR Service under Medical direction can provide a quality control data collection by paramedics (POMR Technicians) designed to provide a complete problem list to be acted upon by the physician. The POMR Service may also provide guidance systems for problem management. The computer becomes most useful as the ideal means for guidance and memory. Dr. Lawrence Weed and Jan Schultz, Co-Directors of PROMIS Lab University of Vermont Medical School, have programmed a complete POMR System which has been functioning on wards at the Mary Fletcher Unit of UVMC since July of 1970, is now also operational in the Family General Practice of Drs. Harold Cross and John Bjorn, PROMIS Lab, Hampden Highlands, Maine.

Results of the POMR Service show that there has *not* been *total acceptance* of the POMR in the Community Hospital. Too few primary care physicians are available to provide a total health care program for all patients in the Augusta Community at this time. Most physicians learn the POMR System in two to six hours and continue to keep Problem-Oriented Medical Records once learned. Often the philosophy of "*comprehensive care for all*" is rejected by physicians, mostly specialists who wish to limit commitment to their special area of health care delivery, and rejected by generalists who badly need organization and such a system but are so overwhelmed by a large volume of crisis care, that they have never begun to learn the POMR and preventive care. A Problem-Oriented Medical Care Service will succeed wherever there is determined leadership and a disciplined service.

After over two years experience, our POMR Ambulatory Clinic Demonstration Model has been redefined to a specific patient population, the patient with malignant

\*This paper was delivered at the Annual Aerospace Medical Association Meeting, Houston, Texas, April 29, 1971.

\*\* Augusta General Hospital, Augusta, Maine 04330.



# Use of Hyperalimentation in a Community Hospital

PADIATH A. ASLAM, M.D.

The demonstration of normal growth and development through total parenteral hyperalimentation by Dudrick, et al<sup>1</sup> is rightly regarded as one of the important advances of recent times. The remarkable advantages of such a mode of therapy are evident in the many reports which have appeared in a very short time.<sup>2,3,4</sup> Such results are usually reported from big Medical Centers. The following case reports illustrate results obtained in a Community Hospital.

## CASE REPORTS

*Case I* – A 51-year-old male was admitted to Augusta General Hospital after sustaining a blunt injury to his epigastrium. On admission, patient was hypotensive and complained of severe epigastric pain. The abdomen was tender and extremely rigid. Aspiration of the peritoneal cavity revealed free blood.

The patient was promptly operated on. A left hepatic lobectomy was done because of a shattered left lobe with severe bleeding. No other injury was evident at this time. The postoperative course was uneventful, and the patient was discharged in two weeks.

One week later, the patient was readmitted because of severe abdominal pain. A tender, silent abdomen with board-like rigidity evoked suspicion of bile peritonitis. No intra-abdominal cause was evident on re-exploration. A few days later, the patient started to drain a large amount of pancreatic secretions through the drain site. Even with careful attempts to protect the skin and a high protein diet, the amount of pancreatic drainage continued unabated, and the patient's condition deteriorated rapidly. His weight went down from a preoperative level of 125 lb. to 88 lb. He developed repeated attacks of abdominal pain and vomiting due to partial small bowel obstruction.

A plastic cannula was introduced percutaneously into the right subclavian vein and the tip was positioned in the superior vena cava. 2,000 cc. of hyperalimentation solution was given through this cannula in the first 24 hours. This was gradually increased to 3,500 cc./24 hours. The central venous pressure was also monitored through the same catheter. After 3 weeks of hyperalimentation, the patient gained 8 lb., and the pancreatic fistula healed. Abdominal pain disappeared, feeding was resumed, and patient sent home.

*Case II* – A 75-year-old female was admitted to Augusta General Hospital because of massive upper gastrointestinal bleeding. Eight years prior to admission the patient had a cholecystectomy followed by a common duct exploration. The last operation showed that the patient had marked hepatic cirrhosis.

At the present admission, the patient was hypotensive and had moderate ascites. The day after admission an emergency porto-caval shunt was done because of shock due to continued bleeding. Postoperatively the patient developed massive ascites, anorexia, and confusion. Oral intake was curtailed and parenteral hyperalimentation was cautiously started. After three weeks of parenteral hyperalimentation of 2,000 to 2,500 cc. and concomitant diuretic therapy, the patient was brought into positive nitrogen balance without encephalopathy developing. An esophagogram before discharge revealed almost complete disappearance of esophageal varices.

phagogram before discharge revealed almost complete disappearance of esophageal varices.

*Case III* – A 60-year-old female was transferred to Augusta General Hospital after being operated upon in a nearby community hospital for extensive mesenteric thrombosis. A large amount of small intestine was resected because of gangrene. Intractable diarrhea, because of short intestinal transit time, followed attempts at feeding. Parenteral hyperalimentation was then started on the fifth day and continued for two weeks. At the end of this period, she was able to eat enough to sustain her nutrition and was discharged to her home.

## COMMENT

The hyperalimentation solution contains 25% glucose and 5% protein hydrolysate. This can be easily prepared in any hospital pharmacy from stock solutions of 50% glucose and 10% protein hydrolysate available commercially (McGaw Labs.). Multivitamin preparations and electrolytes are added to the prepared hyperalimentation solution.

Use of hyperalimentation solution need not be confined to large Medical Centers. Its valuable help in saving severely ill patients from prolonged and fatal illness needs to be more widely known.

In the first patient, parenteral hyperalimentation allowed the pancreatic fistula to heal without secretory stimulus provided by oral intake. At the same time, a partial bowel obstruction could be resolved and positive nitrogen balance achieved.

In the second patient, hyperalimentation decreased the possibility of ammonia intoxication through bacterial putrefaction of protein in the gastrointestinal tract and allowed rapid recovery from a serious operation.

In the last patient, continuous improvement was noticeable in spite of intractable diarrhea following oral intake. Her convalescence was speeded up and weight loss reduced by parenteral hyperalimentation.

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89 Hospital Street, Augusta, Maine 04330

# Intrauterine Contraceptive Device

## A Review and Case Report of Perforation

JAFAR CHAFI, M.D.\*

### HISTORY

The problem of contraception is one that has plagued man for centuries. The literature is rich in examples of methods used to prevent conception down through the ages, throughout the world. Evidences of the use of cervical plugs, of herbs, paper, etc. abound. Hippocrates used a suppository or stone placed intrauterine for contraception. The Arabs, by placing a stone in the uterus of a camel, prevented the animal from conceiving during desert crossings. In 1880, an intrauterine pessary was used as a contraceptive as well as for dysmenorrhea in a retroverted uterus. In 1920, Graefenberg used an intrauterine ring made of the gut of silkworms, and later, used a metallic ring placed totally intrauterine to prevent conception. The use of these rings was abandoned due to the frequency of infection.

In 1959, the modern era of Intrauterine Contraceptive Device (IUCD) herein referred to as IUCD began with the use of polyethylene material. These are: 1) Margolies Spiral; 2) Birnberg Bow; 3) Lippes loop; 4) Saf. T.<sup>®</sup> Coil. There are two metal IUCD's currently in use: 1) Steel ring; and 2) Majzlin, and one of silastic material called "Comet." In the past several months, the Dalkon Shield has been introduced into the contraceptive market, while still in the experimental stage are: 1) Copper 7 (Cu 7); and 2) Tatum T.

### ADVANTAGES OF IUCD

- 1) It is more economical in the long-range.
- 2) When inserted properly, and well tolerated, it requires no more action by the patient.
- 3) It is the first choice if oral contraceptives are contraindicated, and/or the patient is unable to properly use other methods of contraception.
- 4) Present studies indicate that IUCD's are not carcinogenic.

### DISADVANTAGES

- 1) Bleeding – present in 70% of the cases in the first month. This percentage is reduced to 10% by the second or third month. Bleeding is one of the major causes of removal of IUCD.
- 2) Expulsion – The incidence of expulsion varies from 1.8% to 30%, depending on: a) the type of IUCD used; and b) the closer to post-partum the IUCD is inserted, the higher the incidence of expulsion. The incidence of expulsion is 10% during the first year of insertion, and is reduced to 2.5% in the second

year, to 1.5% in the third year. About 20% of the expelled IUCD's pass unnoticed by the patient.

- 3) Infection – can appear as: a) Pelvic Inflammatory Disease; b) Endometritis – studies show that the endometrium changes from edema to endometritis; c) endometritis with parametritis – this infection can involve the adjacent organs. A case of urethral obstruction was reported in JAMA Vol. 21-5, No. 7 Feb. 15, 71.
- 4) Pain may be a constant problem. Analgesics can help until the patient begins to tolerate the IUCD. Pain is another major cause for the removal of IUCD.
- 5) Pregnancy – The incidence of pregnancy with IUCD varies from 2% to 7%. In those patients who become pregnant while the IUCD is still in utero, removal of the IUCD is contraindicated. A spontaneous abortion may ensue; if not, the IUCD, without harming the fetus, will be delivered with the placenta.
- 6) Ectopic, tubal, and ovarian pregnancies have been reported, with a higher incidence of each occurring in the presence of IUCD than is found normally.
- 7) Embedment of IUCD in Uterine Wall.
- 8) Uterine Perforation (See case presentation).

### CONTRAINDICATIONS OF THE USE OF IUCD

Absolute contraindications are: a) in the presence of Pelvic Inflammatory Disease and b) pregnancy.

Relative contraindications are: Dysmenorrhea, leiomyomata uteri, previous myomectomy, hypoplastic uterus, endometritis, adenomyosis, menometrorrhagia, and nulliparous. The relative contraindication of nulliparous is due to the tight cervical canal. The dilatation of the cervical canal sometimes causes fainting, from moderate to as severe a reaction as Grand-mal Seizure.

### MODE OF ACTION

The exact mechanism is still unclear. The evidence indicates that there is some interference with implantation of a fertilized egg; b) Acceleration of tubal transport of a fertilized egg; c) Endometrial changes may be contributing factors.

### CASE PRESENTATION

E. D., a 21-year-old, gravida 0, had an IUCD (Lippes Loop) inserted in July 1970 by a local family physician. In December 70, she stated that she could no longer feel the string of the IUCD in her vagina. She subsequently developed cramp-like pain and moderately heavy vaginal bleeding. The patient stated that she visited her family physician who was unable to examine her satisfactorily because she was too frightened and tense to cooperate. Her discomfort increased to extreme fatigue, nausea, fainting, and an abnormal menstrual period with bleeding of three weeks duration.

\*Attending Obstetrician, Augusta General Hospital, Augusta, Maine 04330.





Fig. 1. The IUCD is located laterally to the left of the mid line with the narrow end of the device directed laterally and superiorly. This disorientation was also present on the lateral film studies not here reproduced.

She was seen by the author in January 71 for removal of IUCD due to constant intolerable pain, which increased with walking. Upon examination with speculum, the string of the IUCD was not apparent. Forceps were introduced into the cervical canal and no string was discovered there either. The speculum was removed and the patient was examined bimanually. The uterus was found acutely retroflexed towards the left side, moderately fixed, and tender upon examination. The left adnexa was thick, tender, and adherent to the uterus. The patient was advised to have an x-ray study but she refused. She was placed on an oral contraceptive Norlestrin.<sup>®</sup> She was urged to return as soon as possible for x-ray study.

The patient returned in April 71 to the office with the same problem. Examination revealed no changes. She agreed to x-ray study, and was sent to the hospital where AP and lateral scout film of the abdomen were taken. The x-ray report (See Fig. 1) described the IUCD located quite laterally and to the left of the mid line with the narrow end of the device directed laterally and superiorly. This disorientation of the IUCD was also present on the lateral film study and represents the significant observation for the diagnosis of uterine perforation by the IUCD.

The patient was admitted to the hospital and in the O.R., the uterine cavity was sounded and curetted. The IUCD was not found. A Hystrogram was performed (See Fig. 2) confirming the diagnosis of perforation of the uterus by IUCD. A Laparotomy was performed. The IUCD was found in the leaves of the left broad ligament surrounded by pockets of purulent material. The uterus was dissected by blunt dissection, as was the adnexa. Pus exuded from the left adnexa into the peritoneal cavity, there it was then aspirated. The IUCD was then exposed, and removed without difficulty or hemorrhage. The patient was put on antibiotics and subsequently had a flat temperature curve. The antibiotic was discontinued and there was an uneventful postoperative course.

#### INCIDENCE OF PERFORATION

The incidence of perforation reported varies between 0.5 to 8.7 per 1000. The incidence varies with the type of IUCD used. A closed type device, a bow or ring has a higher incidence of perforation than does the open Lippes loop or spiral. The time lapse between post-partum and insertion of IUCD is a factor, increasing the risk of perforation when insertion occurs close to date of delivery.



Fig. 2. A Hystrogram clearly demonstrates the extrauterine position of the IUCD. A slight irregularity in contour along the left lateral wall of the uterus coincides with the probable site of perforation.

Teitze reports that perforation with insertion of IUCD at 5 weeks post-partum occurs 14 per 1000 and at 3 months 0.2 per 1000.

The technique of insertion is also a factor to be considered. The age, Gravidity and post-partum morbidity were not related to perforation.

#### MECHANISM OF PERFORATION

The time of perforation occurs primarily at time of insertion. The accident at this time may pass unnoticed by patient and M.D. Favorable factors are: a) acutely retroverted or retroflexed uterus; b) acutely anteverted or anteflexed uterus; c) neglecting to sound uterine cavity before insertion; d) tight internal os and e) closed devices (ring and bow).

In the case presented above, the uterus was acutely retroverted, and the device was an open one (Lippes loop). It is the author's opinion that perforation did not occur at the time of insertion, because hystrogram indicated a fistula in the left lateral mid portion of the uterus.

To eliminate the risk of perforation at the time of insertion, one should: 1) do a thorough and careful pelvic examination; 2) use a tenaculum for traction; 3) sound the uterine cavity; 4) dilate the tight cervix, being aware of the fainting sensation as mentioned above.



## DIAGNOSTIC WORK-UP

- 1) Disappearance of nylon thread could indicate:
  - a) expulsion unnoticed by patient; b) ascent of thread into uterine cavity; c) pregnancy; d) perforation.

Patient should then be examined vaginally and rectally. The IUCD may then be detected or felt outside of the uterus.

- 2) Probing the uterine cavity after pregnancy is ruled out, by uterine sounding and by locator to detect the presence of a foreign (IUCD) body in the uterine cavity. These procedures can be misleading in the case of incomplete perforation.

- 3) X-ray study, scout film of the abdomen, AP and lateral can show the presence of IUCD. The x-ray could be taken with sound into the uterine cavity. In this study, if the picture of the IUCD and sound are not close together, perforation should be suspected. Again this procedure could be misleading in incomplete perforation.

- 4) Hystrogram

## LOCATION OF THE IUCD IN THE ABDOMINAL CAVITY

- It is usually found:
- a) anterior to the uterus.
  - b) in the Pouch of Douglas.
  - c) in the leaves of the broad ligament — the present case.
  - d) free in the abdominal cavity.

## DANGER OF PERFORATION

- 1) Intestinal obstruction; 2) Peritonitis;
- 3) Death may occur and has been reported in the literature.

## MANAGEMENT

Removal of the IUCD should be done immediately after diagnosis is made. Removal is done by the following methods:

- 1) Colpotomy
- 2) Laparotomy
- 3) Laparoscopy

## SUMMARY

A 21-year-old, gravida 0, presented in the office with a history of constant and moderately severe lower abdominal discomfort following use of IUCD for approximately a year. After diagnostic work-up including uterine sounding, x-ray study, and hystrogram, a diagnosis of a perforated uterus was made. The significant roentgen observation on plain film study was *disorientation* of the IUCD which was in an extreme *lateral position*. A Laparotomy was performed, and the IUCD was removed from the leaves of the left broad ligament. In this case, the perforation probably did not occur during insertion. The Hystrogram showed a fistula in the mid portion of the left lateral wall of the uterus, indicating the site of the perforation. It would appear, then, that the perforation occurred sometime after insertion.

From the case presented above, serious complications like uterine perforation must be considered an important factor in the use of IUCD in contraception.

## ACKNOWLEDGMENT

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# Oral Cholecystography and Intravenous Cholangiography

DEMITRIOS NIKOLAIDIS, M.D.\*

## INTRODUCTION

Within the last several months, three cases were operated on at our hospital on the basis of failure of visualization of the gallbladder even after a second dose. The gallbladder was found to be free of disease during surgery and on histologic sections. In view of this, an attempt was made to review and summarize the indications, value and possible limitations of the oral cholecystography and intravenous cholangiography. To simplify matters we selected Cholografin® as the model for the injectable media and Oragrafin® or Telepaque® as models for the oral media.

Telepaque is a moderately lipid-soluble substance but is very poorly soluble in an aqueous system. Cholografin, on the other hand, is freely soluble in aqueous solution and it is this specific property that fits this material for intravascular injection; when administered orally, on the other hand, it is not appreciably absorbed. Telepaque, although entirely unsuitable for intravascular injection, functions as a satisfactory cholecystographic material when transported into the blood across the mucosal lining of the gastrointestinal tract. Once in the blood, both Cholografin and Oragrafin are bound to albumin and are transported to the liver. McChesney and Hoppe have demonstrated that within the liver Telepaque combines with glucuronide to form the glucuronide-ester of this substance. Cholografin does not undergo this change and can also be excreted through the kidneys.

## ORAL CHOLECYSTOGRAM

This is the commonest form of examination. If the gallbladder is well opacified, the diagnostic accuracy can be close to 98%. Non-visualization of the gallbladder is also highly diagnostic since, excluding technical factors, it is most commonly but not always caused by diseased gallbladder or gallstones, or both.

Up until last October 1970, when non-visualization or faint visualization of the gallbladder occurred, a second dose of opaque medium was given and the examination was repeated the following day. The value of the repeat examination is questioned by many experts in this field. They say that when the gallbladder does not visualize with the first dose, in at least 95% of the cases there is a diseased gallbladder which will not visualize on repetition of the examination with the second dose. In order to evaluate the need for and value of the repeat examination and, at the same time, to convince some of the members of the Staff of our hospital who had a different view and reservations about the extra day's hospitalization, we reviewed a series of 167 gallbladder examina-

tions performed in a 3-month period. Out of the 167 cases, 33 had to be repeated because of either non-visualization or extremely poor opacification of the gallbladder. The gallbladder series that were repeated the following day were read as follows: 6 were negative, 7 positive and 20 were not opacified. These results convinced us of the value of the repeat examination. Thus a definitive diagnosis could be established in 39% of the cases. Of course, the repeat examination is performed with no extra charge to the patient.

TABLE 1

RESULTS OF REPEATED GALLBLADDER EXAMINATIONS THE FOLLOWING DAY				
<i>Total number of Gallbladder Series</i>	<i>Number of Repeats</i>	<i>Negative</i>	<i>Positive</i>	<i>Definitive Diagnosis</i>
167	33	6	7	39%

In order to facilitate the repeat examination and thus eliminate the extra day's hospitalization, a new method of the repeat examination was devised using Calcium Iopodate (Oragrafin granules) instead of the Oragrafin capsules. Since this medium is absorbed faster through the small bowel, the repeat examination can be done 4 hours after ingestion of this medium. Dr. Wise and his co-workers at the Lahey Clinic had studied 76 patients in this manner. In 52 of them, a definitive diagnosis of a normal cholecystogram was made. In 14, calculi were seen. In 10, the degree of opacification remained insufficient for diagnostic purposes. Thus, a significant percentage of the examinations; that is, 66 of 76, or 87%, was immediately salvaged and a definitive diagnosis established.

Since October 1970, we have been using this technique in all gallbladders not visualized on the first dose. By 2:00 p.m. of the same day, we have the results and, consequently, the extra day's stay at the hospital is avoided. During this period, a total number of 455 gallbladder series were performed. Out of these, 58 had to be repeated using this method, with the following results: good opacification in 18 cases with exclusion of disease. The diagnosis of gallstones was made in 3 cases. In 37, non-opacification or poor opacification of the gallbladder resulted. The percentage of a definitive diagnosis made with this method is slightly over 36%.

TABLE 2

RESULTS OF REPEATED GALLBLADDER EXAMINATIONS THE SAME DAY				
<i>Total number of Gallbladder Series</i>	<i>Number of Repeats</i>	<i>Negative</i>	<i>Positive</i>	<i>Definitive Diagnosis</i>
455	58	18	3	36%

Non-visualization of the gallbladder with the double-

\*Radiologist, Department of Radiology and Nuclear Medicine, Augusta General Hospital, Augusta, Maine 04330.



dose technique has long been considered adequate evidence of gallbladder disease. This concept can no longer be considered valid. There are many well-known reasons for no opacification like failure to ingest the opaque medium, severe diarrhea or vomiting, malabsorption, gastric obstruction. The most important, of course, are:

a. Cholecystitis which impairs gallbladder opacification by interfering with the concentration of the contrast agent.

b. Stone or obstruction of the cystic duct with inability of the dye to enter the gallbladder.

c. Liver malfunction acting as an obstacle in the normal metabolic pathway of the orally administered opaque medium.

It is the last one that I believe should be emphasized. In all the cases with no visualization of the gallbladder, liver disease has to be ruled out before any significance can be attached to the finding or a diagnosis of gallbladder disease made.

Dr. Wise at the Lahey Clinic reported on 201 patients with non-visualization of the gallbladder by the oral method, even after the second dose. The gallbladder was opacified by subsequent intravenous technique in 70 instances. Twenty-four (24) cases (11.9%) were considered normal. Consequently, it is apparent from this that non-opacification of the gallbladder with the oral method is not a valid indication for cholecystectomy or definite diagnosis of gallbladder disease. At the same time, an intravenous cholangiogram is definitely indicated in all these cases. Many gallbladders which failed to opacify are not removed, according to Dr. Wise, at the Lahey Clinic. Among the reasons for this are inadequate clinical evidence of gallbladder disease, discovery of poor liver function and, of course, the patient's refusal.

There is considerable controversy regarding the value of the post-fatty meal films. The degree of contraction of the gallbladder after the fatty meal apparently does not have any meaning. The most important indication for this part of the examination is to opacify the cystic duct and, in some of the cases, the common duct. In order to do this, the patient is placed in the right posterior oblique position with the left side elevated 15 to 30 degrees, and films of the right upper quadrant are taken. This way the heavier Telepaque or Oragrafin containing bile flows readily into the ducts resulting in adequate opacification of the ducts. In this position, the bile ducts are cleared from the spine. According to some authors, this should result in about 90% of the cases with opacified bile ducts. In our department, we experimented with different commercially available fatty meals used instead of the eggnog. Lately we seem to be having more success with "Cholex." In a careful review of a small series of cases performed recently, we attempted to evaluate the frequency of opacification of the common duct. We found that in 14 out of 86 cases we had excellent opacification of the cystic and common ducts.

In cases in which the bile ducts are not opacified, on the single film, the duct should be considered to be nor-

mal, having permitted free flow of contrast material into the duodenum. If the duct was not normal and patent this would not take place, and dilatation would be evident. The persistence of opacification of the gallbladder 24 hours or even 48 hours after the examination is of no clinical significance. This is due to reabsorption of the contrast medium from the intestines.

One point should be emphasized regarding the preparation of the patient for this examination. The lunch and evening meal the day before the examination should contain simple fats including milk, cream, butter and eggs, but not fried foods. This causes preliminary emptying of the gallbladder preparing it to receive the Telepaque or Oragrafin containing bile. Many patients with actual or suspected gallbladder disease voluntarily, or following the instructions of the physicians (even x-ray departments) eliminate fat-containing foods, both simple and cooked, from their diets. As a result, gallbladder stasis occurs interfering with the free flow of bile to the gallbladder and likewise preventing orally or even intravenously administered contrast medium from entering the gallbladder. There may be a valid argument as to whether or not such a diet may precipitate an attack of acute gallbladder disease or dislodge a stone. No set of instructions for preparation can be applicable to all cases. The referring physician knows the patient and the reasons for requesting the examination. Consequently, it is self-evident that the referring physician's help and co-operation is imperative.

#### INTRAVENOUS CHOLANGIOGRAPHY

Few, if any, radiologists considered intravenous cholangiography as a substitute for oral cholecystography. The reasons are several. Since there is a danger of fatal reaction to the compound, certainly greater than with Oral cholecystography, its exclusive routine use for Cholecystography can not be justified. In addition, the procedure is relatively inconvenient for the patient. It has a measure of discomfort and it is more costly. There is a question also as to whether the gallbladder in the normally functioning state can be as well opacified as with the oral method. It is for this reason that specific indication for intravenous cholangiography has evolved. Indications for intravenous cholangiography are:

1. Demonstration of calculi or other obstruction of the common duct.
2. Evaluation of the biliary tree on symptomatic patients after previous cholecystectomy.
3. Non-opacification of the gallbladder with the oral method.

If calculi are visible, the diagnosis is obvious. If the common duct is less than 7 millimeters in diameter, the cause for non-visualization of the gallbladder with the oral method is probably due to primary gallbladder disease; that is, cystic duct obstruction. If the common bile duct is dilated, the cause of non-visualization may be common duct obstruction alone or combined with cystic duct obstruction. While most surgeons choose to per-



form cholecystectomy on the basis of demonstration of calculi in the gallbladder by means of the oral method, it is Dr. Wise's opinion that intravenous cholangiography should be performed in addition. It is axiomatic that more complete and accurate information is available before surgery the better will be the results of surgery.

If the serum bilirubin is 1 mg.% or less, it is expected that the visualization of the bile ducts will be good. On the other hand, if the level is above 4 mg.%, then the percentage of visualization of the biliary tree and, in particular, the common duct is very low.

In our department, we use the infusion technique with Cholografin. Laminography is used in almost all the cases. It is important that the patient should remain in constant position for the duration of the examination if optimum results are to be expected. This, of course, has the undesirable result of tying up the room for at least 2 hours if not more. The demonstration of calculi in the common duct is not a great problem. It is in the cases in which calculi are present but impacted in the distal end of the common duct and not visible that serious difficulties arise. Since these calculi are productive of symptoms because they partially obstruct the flow of bile, it is the very obstruction which must be detected if these calculi are to be found. In recent years, the concept that the common bile duct dilates simply because the gallbladder has been removed has been rejected. Therefore, when a dilated duct is found, partial obstruction should be suspected.

It has been shown that size alone is of value in the diagnosis of partial obstruction in only 15% of the cases. Other criteria are necessary if the diagnosis of partial obstruction is to be made with any degree of certainty. Out of this need grew the time density retention concept, first presented in 1956 by Drs. Wise and O'Brien. This has been well accepted now and the concept holds that if the density and retention of contrast medium in the bile duct is greater at 2 hours than it was at 1 hour after injection, partial obstruction of the common bile duct or main biliary tree is present. Application of this principle has resulted in a high yield of surgical diagnosis of partial duct obstruction according to Dr. Wise. According to the same author, it has increased the diagnosis of accuracy of cholangiography by approximately 40%. The intention of the use of intravenous cholangiography for slightly more than a decade has been to remove the diagnosis of biliary tract disease in the non-icteric patient from the realm of clinical judgment alone to the scientific and radiologic plan of actually demonstrating the cause of the disease. We may note with satisfaction the passing to oblivion of diagnosis such as biliary dyskinesia and post-cholecystectomy syndrome.

#### VISUALIZATION VS. NON-VISUALIZATION:

Physiopathology, Opaque Medium Dynamics, Enzymes

Since the original description by Graham and Cole of the utilization of oral sodium tetraiodophthalein for gallbladder visualization, it has been held that contrast material ingested by the patient would be taken up by the

liver, would be excreted into the bile, and if the extra-hepatic biliary passages were open, would eventually find its way into the gallbladder lumen. With the reabsorption of fluid by the gallbladder, further contrast-containing bile would enter the gallbladder, and thus the contrast material would eventually attain a concentration considerably above that of the original hepatic bile. In these circumstances, failure to opacify the gallbladder was thought to represent a defect in the ability of the gallbladder wall to concentrate the opaque material coming to it. With the exception of a passing reference by Ivy and a single paper by Johnson, Ellis and Riegel, no serious consideration was given to the possibility of reabsorption of the contrast material itself through the gallbladder wall.

Several years ago, however, Berk and Lasser re-examined the postulate of reabsorption of contrast media across the gallbladder wall. In a series of experiments, they determined to their own satisfaction that Telepaque could, in fact, be reabsorbed from an inflamed gallbladder and, contrariwise, would fail to be reabsorbed in significant quantities from the normal gallbladder. In the preliminary portion of their study, a number of dogs were fed Telepaque, and when opacification of the gallbladder resulted, their cystic ducts were ligated. A number of dogs were chosen to serve as controls and on these no further procedure was carried out except for periodic roentgen examination of gallbladder opacity. In the remainder, infection was introduced into the gallbladder bile by injections of quantities of either *E. coli* or *B. welchii*, or chemical cholecystitis was induced by injecting autogenous gastric juice or Dakin's solution. The results of these and other studies indicated beyond doubt that the cholecystographic material that accumulated in the normal gallbladder was not reabsorbed readily; significant shadows could be seen on roentgenograms made many days after the cystic ducts were ligated. In the animals in which infection or inflammation had been introduced, on the other hand, opacity was lost very quickly after the onset of clinical cholecystitis. Furthermore, utilizing tritium-tagged water, it was found in another series of experiments that there appeared to be no appreciable impairment of water absorption kinetics in either direction across the experimentally inflamed canine gallbladder mucosa.

Drugs possessing an increased lipid solubility are more readily absorbed across the gastrointestinal tract than those with poor lipid solubility. The gallbladder develops as an outpouching from the gastrointestinal tract; therefore, one would anticipate similarities in mucosal dynamics. Telepaque undergoes conjugation to the glucuronide ester in the liver and changes from a relatively lipid-soluble substance to a water-soluble substance. Such conjugation, then, might be expected to impair reabsorption of this material from the normal gallbladder mucosa. On the other hand, when a direct alteration in the absorption kinetics of the gallbladder mucosa occurs or when there is an induced reversal from the conjugated to the

unconjugated form of the cholecystographic material, reabsorption would be enhanced, and an insufficient number of iodine atoms might accumulate within the gallbladder at a given moment to allow for opacification by conventional cholecystography.

In a histochemical study of the gallbladders of patients who came to cholecystectomy, it was shown that those with adequate opacification had a mucosa-total wall ratio that averaged considerably higher than that of the ones visualized poorly or not at all. Those with adequate opacification also showed a relative increase in the quantity of intact fluorescent granules containing beta-glucuronidase and nonspecific esterase in the basal portion of the mucosal cells.

When a commercial beta-glucuronidase preparation was incubated with either opacified human bile or opacified dog bile containing the ester glucuronide of Telepaque, deconjugation of this glucuronide could be demonstrated. More recently, they were able to show that the endogenous beta-glucuronide content in the bile of some patients with non-visualizing or poorly visualizing gallbladders is sufficient to mimic in all respects the hydrolysis of opaque bile noted with the commercial enzyme preparation.

From these findings, one must give serious consideration to the hypothesis that reabsorption of the opaque material in humans can occur by virtue of deconjugation of the media in either gallbladder mucosal cells or in bile containing increased amounts of hydrolyzing enzymes. This should occur only when the enzymes are in either a diffuse cytoplasmic position or in bile rather than in the intact granular (fluorescent) form found in person with normally visualizing gallbladders. Reabsorption might also take place, however, in a subject who had sustained ulceration or atrophy of his gallbladder mucosa. In this situation, deconjugation of the glucuronide ester need not be assumed.

With these facts in mind, one can readily understand why intravenous cholangiographic studies sometimes visualize the gallbladder that is not visualized by oral cholecystography. Cholografin is not conjugated in preparation for biliary excretion and appears in the bile in the same form in which it was injected intravenously. This water-soluble material is not subject to a hydrolysis within the gallbladder that might alter its solubility characteristics, and therefore it can accumulate within this organ more rapidly than can the conjugated oral cholecystographic media. In some instance, however, there may be sufficient structural alterations in the mucosa to allow reabsorption of this water-soluble cholangiographic material in much the same way that such structural alterations might allow for reabsorption of the conjugated (water-soluble) cholecystographic material.

## SUMMARY

It is known that oral cholecystography, well planned and carefully performed, has a diagnostic accuracy close to 98%. It remains the simplest, the safest and the most widely used procedure. It is essentially an anatomic and physiologic study of the gallbladder and bile duct and, incidentally, a liver function test as well. A liver with disturbed function will interfere with the opacification of the gallbladder.

The repeat examination in a non-visualized gallbladder is of diagnostic value and used routinely in our Department. In our two series of repeat examinations, one performed the following day and the other the same day, a definitive diagnosis was made in about the same percentage, 39% and 36% respectively. The examination using Calcium Iodate (Oragrafin granules) has been instituted in our department for the repeat examination of the gallbladder of all inpatients. It is found to be a very effective method, well tolerated, and results in a significant economic contribution by shortening the necessary time for the thorough evaluation of gallbladder disease.

Non-visualization of the gallbladder with the double-dose technique in some cases may not be related to gallbladder disease.

In all cases, with no opacification of the gallbladder after the second dose, liver disease must be excluded and an Intravenous Cholangiogram should be performed. Of course, clinical correlation is very important.

Although there is a slight danger of fatal reactions to the compound for the intravenous cholangiography, this procedure, if well performed, can contribute significantly to the accurate diagnosis of suspected biliary tract disease. Not only the size of the common duct but the time density retention concept has tremendously contributed in a higher yield of accurate diagnosis of partial obstruction. An attempt was made to appraise the value of the post-fatty meal examination of the gallbladder. The merits of including milk, cream, butter and eggs, but not fried foods, in the patient's diet the day before the examination were discussed. The assistance of the referring physician, who knows the patient, in making such a recommendation cannot be overemphasized.

Experimental work has been very instrumental in the change of the concept of the mechanism of non-visualization of the gallbladder in the diseased state.

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# Maine Heart Association Notes

20 Winter Street, Augusta, Maine



## Extracorporeal Circulation — Part II

ROBERT S. LITWAK, M.D.\*

### COMPLICATIONS OF EXTRACORPOREAL CIRCULATION

Presently, the risk of cardiopulmonary bypass is remarkably low, perhaps one percent for perfusions lasting three hours or less. Factors etiologic to risk are related to (1) the equipment, (2) the perfusate and (3) technical execution of the procedure.

Existing equipment places blood in contact with varying antagonistic foreign surfaces and subjects it to unphysiologic flow conditions due to narrowed cannula and tubing sizes, angulation and foaming. These combine to cause measurable destruction of all formed elements and alteration of blood proteins. Excessive postoperative bleeding may be observed and is generally associated with or the result of thrombocytopenia and increased fibrinolytic activity. A significant anemia may be noted five to ten days postoperatively due to delayed red cell destruction. Although open heart surgery can be performed in specific cases without need of donor blood, this has not yet become routinely practical in all cases. Serum hepatitis is perhaps the most common complication of extracorporeal circulation and is roughly proportional to the amount of blood (and therefore the number of donors) required. A postperfusion febrile syndrome with a hematologic pattern similar to infectious mononucleosis, probably caused by cytomegalovirus, has also been shown to be associated with infusion of large quantities of donor blood.

Certain complications are related to technical details of operative management. Air embolus results from failure to completely fill the pulmonary veins and left heart with blood prior to discontinuance of perfusion. Particulate emboli consisting of loose remnants of intracardiac thrombi or calcific fragments may be lethal particularly if they lodge in the coronary or cerebral arteries. Arterial cannulae positioned in atherosclerotic femoral or iliac arteries may occasionally induce retrograde dissection of these vessels. With these arteries are extensively diseased cannulation of the ascending arch of the aorta is advisable.

The postperfusion state tends to be accompanied by measurable but tolerable alterations in organ function. Postoperative low cardiac output is often

of hypovolemic or brady-arrhythmic origin. Maintenance of proper intravascular volume is best achieved by using left or right atrial pressure measurements as guides to blood or colloid administration. Arrhythmias, particularly if associated with slow heart rates (50-70 per minute), are often effectively managed by rate augmentation employing atrial or ventricular pacing with wires implanted at operation. Discontinuance of digitalis preparations several days prior to surgery and avoidance of postperfusion hypokalemia will further reduce the incidence of postoperative arrhythmic problems.

Some degree of ventilatory and respiratory dysfunction is commonly observed especially in patients who have been in preoperative chronic left heart failure or when perfusion has been lengthy. A combination of factors result in reduced diffusion of oxygen from the alveoli into the pulmonary capillaries. Elevated arterial carbon dioxide tensions in the early postoperative period are commonly the result of right to left shunting through atelectatic areas of the lung which are perfused but unventilated. Tracheal intubation and mechanical ventilation has been effective in management of these problems.

In the absence of blood incompatibility, postoperative renal failure consequent to perfusion *per se* is rare. It is probable that the hyperosmolar hemodilute perfusate used in most centers exerts a salutary effect in minimizing the incidence of this complication. When renal failure occurs (particularly acute tubular necrosis) it is generally observed in debilitated patients in cardiac failure who exhibit preoperative nitrogen retention and a pattern of low cardiac output in the postoperative period. Precise intraoperative management and postoperative support and maintenance of cardiac output should reduce this complication to a minimum.

Emotional disturbances ranging from confusion, visual and auditory hallucinations to frank psychoses may develop in certain patients following open heart surgery. These are almost exclusively observed in adults and are believed to be caused by a combination of factors including perfusion trauma, pre and postoperative apprehension and lack of appropriate sleep patterns due to continuing activity in the intensive care unit. Constant reassurance and judicious sedation are required. Fortunately, the be-

\*From the Department of Surgery (Division of Cardiothoracic Surgery), Mount Sinai School of Medicine, New York, N. Y. 10029.

Prepared by the Maine Heart Association for this Journal.





DEAN H. FISHER, M.D.  
COMMISSIONER

## State of Maine Department of Health and Welfare

### Maine's Sentinel Physician System

O. THOMAS FEAGIN, M.D.\*

In the State of Maine, the reporting of communicable diseases has been subject to definition by both legislation and regulation. Physicians, and in fact all citizens, are required to report a large number of communicable diseases. Venereal disease and tuberculosis are reported directly to the Bureau of Health, but all other diseases are supposed to be reported to local health officers, who in turn report to the Bureau. These local health officers are appointed by the town or city. Only four cities have full-time professional health officers. In some cases a local physician serves as health officer on a part-time basis, but in most towns the health officer has no professional health background. This system was felt to be inadequate for several reasons:

1. The local health officer system is inherently weak.
2. The two-stage reporting procedure results in considerable delay in receipt of data in the Central office.
3. The Division of Communicable Disease Control is frequently unable to take effective action because of this delay.
4. Much of the data collected by this system is essentially meaningless.

Accordingly, it was decided to institute a Sentinel Physician system in addition to the existing system.

As a preparatory measure, a description of the goals of disease surveillance in general and of the Sentinel Physician System in particular was included in the weekly communicable disease report. Then, a letter was sent to 821 pediatricians and general practitioners describing the Sentinel Physician System and soliciting their response. As an inducement to participate, the physicians were offered a token payment of \$50 every six months to cover their administrative costs. Replies were received from 214 physicians, of whom 154 stated that they would be willing to participate and 60 that they would not. With a population of approximately one million, fifty sentinel physicians would provide one for every 20,000 people. Since some physicians were expected to drop out of the program, a total of 67 were initially selected. The basis of selection was the geographic location of the physician in

relation to population. Each sentinel physician was sent a six-month supply of report cards and self-addressed envelopes.

The cards were copies of those in use in the State of Rhode Island and were designed to give two types of data. First, the number of cases of several diseases seen during the week provides an index of the total number of cases occurring in each region of the State. Second, notation of an increase in several non-specific syndromes serves as a clue to the presence of non-reportable disease and a variety of other possible problems. It was found that the cards were inadequate in several aspects. First, rubeola was not included. It soon became apparent that Sentinel Physicians were reporting rubeola, and that we first learned of several outbreaks in this manner. Second, part two of the card was too non-specific and yielded data of little value. Therefore, the card was redesigned to include rubeola and to give more specific information especially regarding food poisoning.

The results of the first six months' operation have been encouraging even though not entirely satisfactory. An average of 29 cards per week have been received. The Sentinel Physician System has been of undoubted value as an early warning system for measles outbreaks and has provided the largest part of our influenza surveillance. The information received from the Sentinel Physicians has been included in the weekly communicable disease report. A still unresolved problem is the exact method of statistical tabulation of the reports and the best way of including them in the weekly report.

After six months, 26 physicians had failed to report regularly, and were, therefore dropped from the list of Sentinels. There was no difference in the reporting habits of M.D.'s and D.O.'s. An effort is in progress to bring the number of active Sentinels to 50.

Because of shortages of funds in another Division of the Bureau of Health, the Division of Communicable Disease Control was asked to assume fiscal responsibility for the Child Health Conference Program at the start of 1971. As a result, it became no longer possible to offer a payment of \$50 per six months for participation as a Sentinel Physician. A letter was sent to the Sentinel Physicians advising them of this situation. They were

\* Acting Director, Communicable Disease Control.



## —News From Blue Cross and Blue Shield—



*The following excerpts are taken from a report prepared for Blue Cross and Blue Shield by Creative Health Systems, Inc. This report should be of major interest to those interested in seeing an effective system of Peer Review established in Maine. The report is available in its entirety by writing to Blue Cross and Blue Shield.*

### The Many Faces of Peer Review

The rising cost of health care has pressured government and third party payers to tighten reimbursement policies. The process has led to increased emphasis on utilization review and sometimes results in claims rejection.

Although these procedures may be both justifiable and necessary, they have created a very limited concept of utilization review which often is confused with the much broader concept of peer review. In other words, review to date has been understood frequently as a head-hunting expedition with physicians as the game.

The most simple method for defining peer review is to describe its several essential objectives.

Efficiency in utilization is only one of its purposes. Part of this process is to discover such bad practices as unnecessary surgery and excessive lengths of stay. But doctors are not the only ones who should be subject to review. Review should also point out the mistakes of other involved parties. The impractical regulations of government and loaded inpatient benefit structures are examples of such problems. Peer review could and should provide the means to specifically define these problems in a particular hospital community.

Peer review can also serve as a diagnostic tool to determine community health problems. For example, a high incidence of respiratory disease in a hospital is not automatically indicative of over-utilization in that disease category. The answer could be excessive air pollution in the community. The point is that peer review can detect environmental health problems.

Review can identify potential areas for the reallocation of the health dollar by pointing out areas of inefficient utilization of resources, manpower and facilities. For example, the 1969 admission rate in one Maine hospital was 220/1000, far above the state average. The area of potential reallocation may be toward outpatient care. Peer review can help to determine the reasons for the problem and its proper solution.

Peer review can also serve as an educational process for physicians, as well as other health professionals. That is, through peer review they can see, etched

in black and white, what is happening in the system, things they would always like to have known had the information been available.

The results of peer review can also be an essential tool in the evaluation of the performance of any health system and its impact upon the health status of the people it serves. Example: if a medical foundation had as one of its goals to decrease the average length of stay by one day in a given hospital, review results can tell if the goal was achieved, and if not, why not.

Concerning financial matters, peer review can provide more accurate budgeting and cost projections in the health system as a reliable means of monitoring costs and utilization over time. Example: a hospital administrator can rely upon the reviewing physicians to set standards against which the system should perform. If he can be assured the standards will be adhered to, he can budget more accurately with this knowledge.

Peer review reports can aid research in such areas as the incidence of disease by geographical area and the identification of specific occupation-related health hazards. Example: the identification of a high incidence of tuberculosis in an area or industry can serve the planner who might then opt for the introduction of a mobile clinic as one component of a community health care system.

Thus, the peer review process is an investment, a substantial resource input, into the health care system. Its effectiveness must initially be measured in terms of its accomplishment of defined objectives, its efficiency, and its impact in the areas of quality care, cost control, and the utilization, and reallocation of scarce and maldistributed health care resources. In turn, peer review can be supported and financed by those in the health care system who benefit from its effects.

In summary, peer review has both quantitative and qualitative purposes. Its quantitative objective is the economically efficient delivery of medical care. The qualitative objective is the improvement of medical care through its educational and analytical capabilities.



# *From the Secretary's Notebook*

## 118TH ANNUAL SESSION OF THE M.M.A. HOUSE OF DELEGATES

The 118th annual session of the M.M.A. House of Delegates was held at The Colony, Kennebunkport, Maine on Sunday, June 13, 1971 with an attendance of sixty-nine delegates and alternates and twenty-six guests. Charles R. Glassmire, M.D., President of the M.M.A., called to order the meetings of the House which were presided over by Robinson L. Bidwell, M.D., Speaker of the House.

**AMA President** – Dr. Glassmire introduced Walter C. Bornemeier, M.D., President of the American Medical Association. Dr. Bornemeier spoke very briefly regarding the problems that are facing the medical profession today.

**Election of Speaker and Vice Speaker of the House of Delegates (for meetings to be held in 1972)** – George W. Bostwick, M.D. was elected Speaker of the House of Delegates, and Leonard G. Miragliuolo, M.D., Vice Speaker of the House.

**Budget for 1972** – The proposed budget for fiscal year 1972 as presented at the Interim Meeting of the House of Delegates on April 4 by Robert F. Ficker, M.D., Chairman of the Budget Committee, was approved.

**Resolution submitted by Hancock County** – This resolution, which follows, was defeated:

WHEREAS the cost of medical care is such that drastic measures for its control are being contemplated;

WHEREAS the cost of drugs to the individual is a significant part of the total medical costs;

WHEREAS a significant portion of the cost of drugs is to pay for the promotional activities of the ethical drug industry;

WHEREAS the majority of these activities such as drug salesmen's visits to Doctors' offices, unsolicited samples through the mails, unsolicited publications, brochures and other promotional materials arriving through the mails, displays at medical meetings, etc. are of nebulous value to the proficient exercise of medical care;

BE IT RESOLVED that the American Medical Association endorses as its policy to discourage the drug industry from carrying on these activities and encourages the drug industry to reduce its promotional activities to simple unembellished information presented to the physician about new products.

**Resolution presented by Kevin Hill, M.D.** – This resolution, which follows, was approved:

BE IT RESOLVED: That the AMA House of Delegates investigate the situation which has resulted from a withdrawal of support from the Joint Committee on the Allied Health Personnel in Ophthalmology by the AMA Board of Trustees, and assist in retaining a

wholesome relationship between the AMA and the Joint Committee on Allied Health and Personnel in Ophthalmology, and

BE IT FURTHER RESOLVED: That the Board of Trustees of the AMA be petitioned to reconsider its withdrawal action and to consider support and sponsorship of the Joint Committee on Allied Health Personnel in Ophthalmology.

**Resolution submitted by the Staff of Thayer Hospital** – This amended resolution, which follows, was adopted:

WHEREAS, properly performed medical necessity determination by a hospital utilization review committee involves an audit of the patient's entire medical record according to a utilization review plan which is accepted and periodically reviewed by the Division of Hospital Services, Department of Health and Welfare, State of Maine, and

WHEREAS, claims review by the Medicare Fiscal Intermediary involves review of far less information ranging from a billing form alone to various other documents as may be requested by the intermediary,

NOW, THEREFORE, BE IT RESOLVED that the Maine Medical Association request that no claim for Medicare reimbursement (Part A) may be denied by the fiscal intermediary without the intermediary stating the specific reasons for the rejection in writing to the hospital utilization review committee,

AND ALSO, that no notification be made to the patient until the utilization review committee and the fiscal intermediary have completed all correspondence in the case, within the letter of the Medicare law.

### **Amendments to M.M.A. Constitution and Bylaws**

– Since the proposed amendments had been in the delegates' hands for over a month, Dr. George Wood pointed out only the recent suggested changes that had been received from our members. After some discussion, the newly amended Constitution and Bylaws were adopted (copy to be sent to all members of the M.M.A. as soon as it is printed). Dr. Wood made a motion, and it was approved, that the State be divided into nine (9) Districts (Executive Committee) as follows: 1) York County; 2) Cumberland County; 3) Lincoln-Sagadahoc and Knox Counties; 4) Kennebec County; 5) Franklin, Oxford and Somerset Counties; 6) Hancock, Washington and Waldo Counties; 7) Androscoggin County; 8) Penobscot and Piscataquis Counties and 9) Aroostook County.

The new Bylaws of the Association created six new "Standing" Committees: Allied Health Professions, Continuing Education, Emergency Medical Service, Government Health Activities, Hospital Association Liaison and Peer Review.



For the past year, the Peer Review Committee was a "Special" Committee and they suggested that the present members continue, with additions as recommended by the Executive Committee (with at least 1 representative from each district). In its 1970-1971 committee report, the Peer Review Committee recommended the following:

1. The Maine Medical Association will establish a Peer Review Committee to serve the physicians of the State of Maine.
2. The State Peer Review Committee might consist of representation based upon one representative for each 50 doctors or major part thereof.
3. Function:
  - a) To establish bylaws under which it will function according to established rules of order.
  - b) To meet at regular intervals to conduct business.
  - c) To act in an advisory capacity for peer review functions throughout the State.
  - d) To aid County/Districts in formation of local peer review organizations.
  - e) To act as arbitration committee for problems not resolved by local peer review organizations.
  - f) To report its activities to the component district/counties and publicize its functions in such fashion that the public becomes aware of the Maine Medical Association's concern for quality care.

**Committee on Nominations** – The following slate was presented by this committee:

*Executive Committee*

1st District: Robert F. Ficker, M.D. and Charles W. Kinghorn, M.D.

2nd District: Howard P. Sawyer, Jr., M.D. and Stanley B. Sylvester, M.D.

3rd District: Paul A. Fichtner, M.D. and Paul J. Killo-ran, M.D.

4th District: Richard T. Chamberlin, M.D. and Brinton T. Darlington, M.D.

5th District: Charles W. Eastman, M.D. and H. Carl Amrein, M.D.

6th District: Euclid M. Hanbury, Jr., M.D. and James C. Bates, M.D.

7th District: John W. Carrier, M.D. and Donald L. Anderson, M.D.

8th District: Thornton W. Merriam, Jr., M.D. and Leonard G. Miragliuolo, M.D.

9th District: H. Douglas Collins, M.D. and John B. Madigan, M.D.

*President-Elect*

George W. Wood, III, M.D. and Richard P. Laney, M.D.

A complete list of the new Executive Committee can be found on page 192 in this issue. The remainder of the report of the Committee on Nominations, consisting of nominees for Standing Committees for 1971-1972, was approved. The M.M.A. President was given the authority to fill newly created positions on the Standing Committees in 1971, with the consent of the Executive Committee. The list of the Standing Committees will be published in the September issue of The Journal of the Maine Medical Association.

**Annual Reports** – Reports were submitted prior to the meeting by the following and included in the House of Delegate's folder:

George W. Wood, III, M.D., Council Chairman; and Councilors, Robert F. Ficker, M.D., Charles W. Eastman, M.D., James C. Bates, M.D. and John B. Madigan, M.D.

Standing Committees: Legislative, Lloyd G. Davies, M.D. and Ethics and Discipline, Alvin A. Morrison, M.D.

Special Committees: Mental Health, Alan M. Elkins, M.D.; Conservation of Vision, Dexter J. Clough, 2nd, M.D.; To Conduct a Study of Maternal Mortality, Robert M. Knowles, M.D.; Maine Committee – AMA-ERF, Charles R. Glassmire, M.D.; Liaison with Health Professions, George W. Bostwick, M.D.; Maternal and Child Welfare, Alice A. S. Whittier, M.D.; Liaison Committee Between the Maine State Bar Association and the M.M.A., John A. Woodcock, M.D.; Continuing Medical Education, Richard T. Chamberlin, M.D.; Emergency Medical Service, Transportation and Communication, Edward K. Morse, M.D. and Peer Review, Richard P. Laney, M.D.

The report of the delegate to the New Hampshire-Vermont meeting, Asa C. Adams, M.D.; the delegate to the Rhode Island meeting, Leonard G. Miragliuolo, M.D., and the report of the Secretary-Treasurer, Patricia A. Bergeron, were also included in the Delegate's folder.

Reports were presented at the meeting by the Executive Director, Daniel F. Hanley, M.D.; Paul A. Fichtner, M.D., Councilor for the Third District; Stanley E. Her-rick, Jr., M.D., Delegate to the Massachusetts meeting and Thomas A. Martin, Sr., M.D., Chairman of the Medical Advisory Committee.

**Associated Hospital Service of Maine Award of Appreciation** – This award, which was initiated this year, was given to Richard P. Laney, M.D. of Skowhegan.

**A. H. Robins Award** – The Community Service Award for 1971, sponsored by the A. H. Robins Company, was presented to Harry Brinkman, M.D. of Farmington by Paul A. Fichtner, M.D.

**Franklin County Up-To-Date** – David C. Dixon, M.D. of Farmington gave a detailed report of his activities during the past year with the Comprehensive Health Service Delivery System for Franklin County. Because of the interest in this effort, Dr. Dixon was asked, and agreed, to submit his report for publication in The Journal of the Maine Medical Association.

**Woman's Auxiliary to the M.M.A.** – Mrs. Terrance J. Sheehan, President of the Auxiliary for 1970-1971, presented an excellent report of the activities of this group during the past year and emphasized the need for more physicians and paramedical personnel in the State.

**M.M.A. Group Blue Cross-Blue Shield Plan** – A motion was made that the M.M.A. upgrade its health insurance plan from the current BCBS "C" to the high level BCBS "D" – to become effective August 1, 1971. This motion was unanimously approved.

*Continued on Page 201*

President  
Maine Medical Association  
1971-1972



LINUS J. STITHAM, M.D.

Linus J. Stitham, M.D. of Dover-Foxcroft, Maine became the 122nd President of the Maine Medical Association at the 118th Annual Session banquet on June 14, 1971. Dr. Stitham served as Speaker of the House of Delegates from 1963 to 1966, Councilor for the Sixth District from 1967 to 1970; the last year as Council Chairman, and as President-elect from 1970 to 1971.

Dr. Stitham was born in Mars Hill, Maine on March 31, 1917, son of Charles A. and Barbara O. Stitham. Dr. Stitham was graduated from the University of St. Francis Xavier, the University of Alabama and received his medical degree from St. Louis University School of Medicine in 1943.

He interned at the Maine General Hospital from 1943 to 1944, served in the U. S. Army Medical Corps until 1946, holding the rank of Captain, and served a residency at St. Mary's General Hospital in Lewiston from 1946 to 1947. Dr. Stitham has been in general practice in Dover-Foxcroft since 1947.

Dr. Stitham is a member of the Maine Medical Association, the Piscataquis County Medical Society, is a Past President of the Maine Chapter of the American Academy of General Practice and has been a member of the State of Maine, Board of Registration of Medicine since 1964.

# Executive Committee Members Elected at the 118th Annual Session of the Maine Medical Association

Kennebunkport, Maine

June 13, 14, 15, 1971

*President*

LINUS J. STITHAM, M.D.  
Dover-Foxcroft

*President-elect*

GEORGE W. WOOD, III, M.D.  
Brewer

*Immediate Past President*

CHARLES R. GLASSMIRE, M.D.  
Portland

*Executive Director*

DANIEL F. HANLEY, M.D.  
Brunswick

*Delegate to the AMA*

GEORGE W. WOOD, III, M.D.

*Alternate Delegate to the AMA*

RICHARD P. LANEY, M.D.  
Skowhegan

*Speaker of the House*

GEORGE W. BOSTWICK, M.D.  
Newcastle

*First District*

ROBERT F. FICKER, M.D.  
Kennebunkport

*Second District*

HOWARD P. SAWYER, JR., M.D.  
Portland

*Third District*

PAUL A. FICHTNER, M.D., *Chairman*  
Bath

*Fourth District*

RICHARD T. CHAMBERLIN, M.D.  
Waterville

*Fifth District*

H. CARL AMREIN, M.D.  
Madison

*Sixth District*

EUCLID M. HANBURY, JR., M.D.  
Belfast

*Seventh District*

DONALD L. ANDERSON, M.D.  
Lewiston

*Eighth District*

THORNTON W. MERRIAM, JR., M.D.  
Bangor

*Ninth District*

JOHN B. MADIGAN, M.D.  
Houlton



DR. WOOD



DR. GLASSMIRE



DR. BOSTWICK



## GEORGE W. WOOD, III, M.D.

Dr. Wood of Brewer, Maine served as Alternate Delegate to the AMA from 1965 to 1969, and has been Delegate since 1969. At this June's meeting, he was reelected, by acclamation, to serve as our Delegate until January 1, 1974. Dr. Wood was M.M.A. Council Chairman from 1970 to 1971 and was elected President-elect for 1971 to 1972.

Dr. Wood was born in Macon, Georgia on December 5, 1921, son of George W. and Daisy H. Wood. He was graduated from the University of Florida in 1943 and received his medical degree from Cornell University Medical College in 1946. His postgraduate courses and hospital services include a rotating internship from 1946 to 1947, assistant resident in Medicine from 1949 to 1950 and senior resident from 1950 to 1951 at the Hartford Hospital in Connecticut. From 1947 to 1949, he served as a Medical Officer in the U. S. Army. He was senior physician at the Connecticut State Tuberculosis Sanatorium, and Clinical Instructor in Medicine at Yale University School of Medicine from 1951 to 1952. Dr. Wood has been practicing Internal Medicine in the Brewer area since 1952.

He is a member of the Penobscot County Medical Association, the Maine Medical Association, the American Medical Association, the American Board of Internal Medicine, and is a Past President of the Maine Tuberculosis and Health Association and the Maine Thoracic Society. Dr. Wood has also served as the volunteer Medical Director of the Bangor-Brewer Tuberculosis and Health Association, served for many years on the Hospital and Advisory Committee of the City of Bangor, was President of the Eastern Maine General Hospital medical staff, and is a member of the Board of Directors of both the Maine Heart Association and the Maine Tuberculosis and Health Association. In 1969, he was awarded the Roselle W. Huddilston Medal for his "distinguished service and outstanding contributions in the field of health to the people of the State of Maine."

## CHARLES R. GLASSMIRE, M.D.

Dr. Glassmire of South Portland, Maine, immediate Past President of the Maine Medical Association, was born in Brooklyn, New York on May 15, 1920, son of Dr. Charles M. and Gretchen R. Glassmire. He was graduated from the Mercersburg Academy in 1937, received his A.B. in 1941 and his medical degree in 1944 from the University of Pennsylvania. He interned and served a residency at the Maine General Hospital in Portland, and later a fellowship in Rheumatology at the New England Center Hospital in Boston. He served for two years as a Medical Corps Officer in Germany with the U. S. Army.

Dr. Glassmire served as M.M.A. Councilor for the First District from 1966 to 1969; the last year as Council Chairman, as President-elect from 1969 to 1970, and as President from 1970 to 1971.

He is a member of the American Medical Association, the Maine Medical Association, the Cumberland County Medical Society, the American Rheumatism Association, the New England Rheumatism Association, the Maine Society of Internal Medicine and the American Society of Internal Medicine. Dr. Glassmire has been an attending physician on the Medical Service of the Maine Medical Center since 1946, and on the staff of the Mercy Hospital in Portland. He is active in many community affairs, but most of his time away from medicine is spent in Masonry.

Dr. Glassmire is married to the former Ruth Elizabeth Dearborn of Oak Park, Illinois. They have one son, Charles R. Glassmire, Jr., and two daughters, Mrs. Edward R. Hanson and Beth.

## GEORGE W. BOSTWICK, M.D.

Dr. Bostwick of Newcastle, Maine served as Vice Speaker of the House of Delegates from 1969 to 1971 and was elected to serve as Speaker of the House for the coming year.

Dr. Bostwick was born in New Haven, Connecticut on June 6, 1927, first son of Dr. Wallace R. and Eunice Ellen Clapp Bostwick. Dr. Bostwick's father practiced medicine in New Jersey until his death in 1969.

Dr. Bostwick was graduated from Blair Academy in Blairstown, New Jersey in 1945. He served on active duty with the U. S. Naval Reserves as a PhM 3/c for two years, then continued with his education. Dr.

Bostwick was graduated from Yale University with a B.A. degree in English in 1950 and received his medical degree from Yale University School of Medicine in 1954. He served a rotating internship at the Central Maine General Hospital in Lewiston from 1954 to 1955, and was Assistant Resident in Medicine, Pediatrics and Anesthesiology there in 1955. Dr. Bostwick has practiced in Newcastle since 1956.

He is a member (and Secretary-Treasurer) of the Lincoln-Sagadahoc County Medical Society, the Maine Medical Association, the American Academy of General Practice, the Maine Chapter of the American Academy of General Practice, the Maine Society of Anesthesiologists, the American Society of Anesthesiologists, Inc., the New England Society of Anesthesiologists, the International Anesthesia Research Society, and is a Diplomate of the National Board of Medical Examiners and American Board of Family Practice. His outside interests include skiing, philately, modern languages, and nap-time!

Dr. Bostwick is married to the former Anne Goodspeed of Wilton, Maine. They have three sons, Stephen Wallace, Richard Deane and William Kennedy, and one daughter, Elisabeth Fairgreaves.

#### RICHARD P. LANEY, M.D.

Dr. Laney of Skowhegan, Maine served as M.M.A. Councilor for the Fourth District from 1954 to 1956 and as Alternate Delegate to the AMA since 1969. He was reelected, by acclamation, to serve as our Alternate Delegate until January 1, 1974.

Dr. Laney was born in Skowhegan on April 5, 1907, son of William J. and Louise M. Laney. He was graduated from Skowhegan High School in 1924, Bowdoin College in 1928 and received his medical degree from Hahnemann Medical College in 1932. He interned at the Crozer Hospital in Chester, Pennsylvania and served a residency at the Memorial Hospital in Worcester, Massachusetts from 1932 to 1934. Dr. Laney located in Skowhegan to practice internal medicine in 1935.

He is a member of the Somerset County Medical Society, the Maine Medical Association, the American Medical Association and the American Society of Internal Medicine.

#### ROBERT F. FICKER, M.D.

Dr. Ficker of Kennebunkport, Maine served as M.M.A. Councilor for the First District from 1969 to 1971 and was elected as a member of the Executive Committee for the First District (York) for 1971 to 1973.

Dr. Ficker was born in Brooklyn, New York on April 11, 1916, son of Robert V. and Emily Kaiser Ficker. He was graduated with a B.A. degree from Bard College of Columbia University in 1939 and received his medical degree from New York University College of Medicine in 1943. He interned at Bellevue Hospital in New York from 1942 to 1943 and at the Brooklyn Hospital from 1943 to 1944. Dr. Ficker served as a Captain in the U. S. Army Medical Corps for two years. He took a postgraduate course in Internal Medicine at New York University from 1946 to 1947, and then practiced in Wanaque and Ogdensburg, New Jersey before coming to Kennebunkport in 1953. He has been on the staff of Webber Hospital in Biddeford since 1953.

He is a member of the York County Medical Society, serving as President in 1960, the Maine Medical Association and the American Medical Association. Dr. Ficker is a current member of the M.M.A. Cancer Committee and Peer Review Committee and was Chairman of the School Health Committee from 1958 to 1959. In addition, Dr. Ficker has been a member of the M.M.A. House of Delegates for several years.

#### HOWARD P. SAWYER, JR., M.D.

Dr. Sawyer of Raymond, Maine was elected as a member of the M.M.A. Executive Committee for the Second District (Cumberland) for 1971 to 1972.

Dr. Sawyer was born in Fall River, Massachusetts on March 2, 1923, son of Howard P. and Mary G. Sawyer. He was graduated from Phillips Exeter Academy, Dartmouth College and received his medical degree from Temple University School of Medicine in 1947. He served in the U. S. Army Medical Department from 1943 to 1945, the U. S. Army Medical Corps from 1949 to 1954 and has been in the U. S. Army Re-



DR. FICKER



DR. SAWYER

serves from 1954 to the present, serving as Commanding Officer, 1125th U. S. Army Hospital, holding the rank of Colonel. Dr. Sawyer interned at the Mary Hitchcock Memorial Hospital in Hanover, New Hampshire from 1947 to 1948 and served a residency in anesthesiology at the Veterans Administration Hospital in White River Junction, Vermont from 1948 to 1949 and the Mary Hitchcock Memorial Hospital from 1949 to 1950. He was at the Mary Hitchcock Memorial Hospital in 1954, the Veterans Administration Hospital in Vermont from 1954 to 1956, then located in Portland where he has been affiliated with the Maine Medical Center and is the Assistant Director of the Department of Anesthesiology.

He is a member of the Cumberland County Medical Society, serving several years as Delegate and Chairman of the Legislative Committee; the Maine Medical Association, formerly Chairman of the Legislative Committee; and the American Medical Association. Dr. Sawyer is also a member and Past President of the Maine Society of Anesthesiologists; current President and former Chairman of the program committee of the New England Society of Anesthesiologists, and former Director and member of the Administration Affairs Committee of the American Society of Anesthesiologists and is Assistant Professor of Anesthesiology at Tufts University School of Medicine.

Dr. Sawyer's hobbies include genealogy, farming and woodlot management.

He is married to the former Elizabeth Anne Vernon of Reading, Pennsylvania and they have nine children.

#### PAUL A. FICHTNER, M.D.

Dr. Fichtner of Bath, Maine served as M.M.A. Councilor for the Third District from 1970 to 1971 and was elected to represent that District (Lincoln-Sagadahoc, Knox) again on the Executive Committee for 1971 to 1974. In addition, the Executive Committee elected Dr. Fichtner to serve as its Chairman for 1971 to 1972.

Dr. Fichtner was born in Hartford, Connecticut on December 10, 1920, son of Paul A. and Frances K. Fichtner. He was graduated from Trinity College in 1943 and received his medical degree from Long Island College of Medicine in 1946. He interned at the Hartford Hospital from 1946 to 1947 and served a general surgery residency at McCook Memorial Hospital in Hartford from 1947 to 1948. Dr. Fichtner served in the U. S. Army Medical Corps as a Captain from 1948 to 1951. He was located in Rangeley, Maine from 1951 to 1962 and then moved to Bath where he now practices.

He is a member of the Lincoln-Sagadahoc County Medical Society, the Maine Medical Association, the American Medical Association and the American Academy of General Practice. Dr. Fichtner has served on the M.M.A. Health Insurance Committee, has been a Delegate from Franklin and Lincoln-Sagadahoc Counties, and is a medical examiner for the State of Maine.

Dr. Fichtner is married to the former Arlene Verrill.



## RICHARD T. CHAMBERLIN, M.D.

Dr. Chamberlin of Fairfield, Maine was elected from the Fourth District (Kennebec) to serve on the M.M.A. Executive Committee for 1971 to 1972.

Dr. Chamberlin was born in Randolph, Vermont on October 5, 1930, son of Paul P. and Pauline L. Chamberlin. He was graduated from Colby College with a B.A. degree in 1952 and received his medical degree from Tufts University School of Medicine in 1956. Following an internship at the Indiana University Hospitals from 1956 to 1957, he served two years in the U. S. Navy Medical Corps as a Lieutenant. He served a residency at the Boston City Hospital (Tufts) from 1959 to 1961 and the Boston V.A. Hospital, Jamaica Plains from 1961 to 1962.

He was a Teaching Fellow in Medicine at Tufts from 1960 to 1962; on the Active Staff, Internal Medicine, at the Thayer Hospital and Seton Hospital, and the Consultative Staff at the Central Maine Sanatorium from 1962 to 1967; Director of Extended Care and Social Medicine at the Thayer Hospital from 1967 to 1969; Director of Postgraduate Medical Education at the Thayer Hospital from 1967 to the present; Chairman of the Utilization Review Committee at the Thayer Hospital from 1967 to the present; Chairman of the Death Committee at the Thayer Hospital from 1967 to 1971; Director of Continuing Medical Education, Upper Kennebec Valley from 1969 to 1971; Regional Health Agency in Waterville from 1969 to 1971 and Director of Continuing Care at the Thayer Hospital from April 1971 to the present.

He is a member of the Kennebec County Medical Association, the Maine Medical Association and the American Medical Association. Dr. Chamberlin is also a member of the Maine Society of Internal Medicine, Chairman of the Education Committee of the Maine Thoracic Society, a member of the Board of Directors of the Maine Tuberculosis and Health Association, and a member of the American Geriatrics Society, the American Congress of Rehabilitation Medicine and a Fellow of the American College of Physicians.

Dr. Chamberlin is married and has five children.

## H. CARL AMREIN, M.D.

Dr. Amrein of Madison, Maine was elected to represent the Fifth District (Franklin, Oxford, Somerset) on the M.M.A. Executive Committee for 1971 to 1973.

A native of Norwalk, Connecticut, Dr. Amrein was graduated from Bates College in 1938 and received his medical degree from Tufts University School of Medicine in 1943. He served his internship at the Central Maine General Hospital in Lewiston from 1943 to 1944. Dr. Amrein has practiced in Madison since his discharge from the U. S. Navy in 1946 and is on the staff of the Redington-Fairview General Hospital, serving as consulting surgeon.

Dr. Amrein is a member of the Somerset County Medical Society, the Maine Medical Association, a Fellow of the International College of Surgeons and is Regent for the State of Maine.

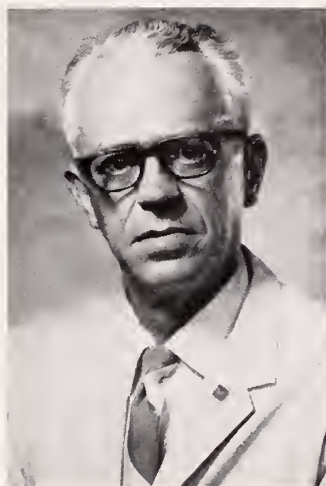
## EUCLID M. HANBURY, JR., M.D.

Dr. Hanbury of Belfast, Maine was elected to serve on the M.M.A. Executive Committee for the Sixth District (Hancock, Washington, Waldo) for 1971 to 1973.

Dr. Hanbury was born in Portsmouth, Virginia on February 14, 1927, son of Euclid M. and Blanche C. Hanbury. He was graduated from Virginia Military Institute in 1944, Hampden-Sydney College in 1947, Duke University in 1948 and received his medical degree from the University of Virginia Medical School in 1952. He interned in medicine and surgery at the Royal Victoria Hospital in Montreal from 1952 to 1953, was a Special Fellow in Medicine and Resident Fellow in Thyroid Physiology at the Sloan-Kettering Institute in New York from 1953 to 1954, was Assistant Resident and Research Fellow in Surgery at the University of Virginia Hospital from 1954 to 1957, was a Fellow in Surgery at the Lahey Clinic in Boston from 1957 to 1958, and was a Senior Assistant Resident (1958-1959) and Resident Surgeon at the University of Virginia Hospital (1959-1960). He was also an Instructor in Surgery at the University of Virginia from 1960 to 1963, Director of Medical Education at the Portsmouth General Hospital in Virginia from 1963 to 1968, Director of Isotope Laboratory at the Portsmouth General Hospital in Virginia from 1964 to 1968,



DR. CHAMBERLIN



DR. AMREIN



DR. HANBURY

and Co-director of the Renal Dialysis Unit at Portsmouth General Hospital in Virginia from 1966 to 1968. In 1968, Dr. Hanbury located in Belfast.

He is a member (and former Secretary-Treasurer) of the Waldo County Medical Society, the Maine Medical Association, the American Medical Association, the American Thyroid Association, the American Association for the Advancement of Science and the New York Academy of Science.

#### DONALD L. ANDERSON, M.D.

Dr. Anderson of Lewiston, Maine was elected from the Seventh District (Androscoggin) to serve on the M.M.A. Executive Committee for 1971 to 1974.

Dr. Anderson was born in Caribou, Maine on April 4, 1915, son of William L. and Geraldine M. S. Anderson. He was graduated from Caribou High School in 1931, the University of Maine in 1935 and received his medical degree from Boston University School of Medicine in 1940. Dr. Anderson interned at the Eastern Maine General Hospital from 1940 to 1941. He served in the military from 1941 to 1945, holding the rank of Captain, and from 1945 to 1948 served a residency in Urology at the Central Maine General Hospital. A board certified Urologist, Dr. Anderson has practiced in Lewiston since 1948.

He is a member (and Secretary-Treasurer) of the Androscoggin County Medical Association, the Maine Medical Association, the American Medical Association and the American Urological Association.

His wife, Dorothy, is also a physician.

#### THORNTON W. MERRIAM, JR., M.D.

Dr. Merriam of Bangor, Maine was elected to serve on the M.M.A. Executive Committee from the Eighth District (Penobscot, Piscataquis) for 1971 to 1974.

Dr. Merriam was born in Cleveland, Ohio on December 30, 1929, son of Thornton Ward and Alice H. Merriam. He was graduated from Colby College in 1951 and received his medical degree from Columbia University College of Physicians and Surgeons in 1955. After a year's internship at the Mary Hitchcock Hospital, Dr. Merriam served a residency at Dartmouth Medical School from 1956 to 1959. He served in the U. S. Navy at Camp Lejeune, North Carolina from 1959 to 1961 as a Lieutenant Commander and in 1962 located in Bangor.

He is a member of the Penobscot County Medical Association, the Maine Medical Association, the American Medical Association and the American Society of Internal Medicine.

#### JOHN B. MADIGAN, M.D.

Dr. Madigan of Houlton, Maine was M.M.A. Councilor for the Sixth District from 1970 to 1971 and

was elected to serve on the Executive Committee for the Ninth District (Aroostook) for 1971 to 1972.

Dr. Madigan was born in Houlton on May 11, 1917, son of James Cottrill and Doris Waterall Madigan. He was graduated from Georgetown University in 1938 and received his medical degree from Tufts University School of Medicine in 1942. He served a rotating internship at the Springfield Hospital in Massachusetts from 1942 to 1943 and then served in the U. S. Army for three years as a Captain. In 1946, he served a residency at the Springfield Hospital and then located in Houlton in 1947.

He is a member of the Aroostook County Medical Society, the Maine Medical Association, and the American Medical Association. He is a former President of the Aroostook Tuberculosis Association, a member of the Maine Chapter of the American Academy of General Practice, a former member of the Houlton Town Council, and the N.E. Regional Medical Advisory Board, and is a Board Director of the Maine Health Planning Council, the Aroostook Health Services, Inc. and the Cary Memorial Library.

Dr. Madigan was married in 1952 to the former Mildred Moriarty of Quincy, Massachusetts and they have seven children.

#### COMMUNITY HOSPITAL PROBLEM-ORIENTED MEDICAL CARE SERVICE

*Continued from Page 177*

disease. A Community Comprehensive Cancer Care Service has evolved with a team effort to total care in cancer management including Medicine, Radiology, Pathology, Surgery, Medical Physics, POMR Technicians, Social Service, Tumor Registry, Nursing Service and Oncology Consultants.

Continuing Education is provided for technicians, physicians' assistants, nurses and physicians at the Augusta General Hospital weekly on Wednesdays and for one to three week periods at the PROMIS Lab, Hampden Highlands, Maine.

Emphasis in the Augusta, Maine POMR training program is now placed on manual data organization, medical record abstraction, the automated history, preparing titled structured progress notes, consultants' notes, flow sheets

and the audit of patients care delivery by weekly multiple disciplinary review of management.

In a later report there will be information describing the Community Comprehensive Cancer Care Program using the problem-oriented medical care system.

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#### MAINE HEART ASSOCIATION NOTES

*Continued from Page 186*

havioral patterns tend to return to normal within two weeks of operation.

#### THE FUTURE OF EXTRACORPOREAL CIRCULATION

It is almost certain that further improvements in design of extracorporeal circulatory and gas exchange systems will expand permissible periods of use to days or weeks, thereby making prolonged cardiac and respiratory assistance a practical reality. Ideally, such systems will not require donor priming blood or systemic heparinization of the patient.

Thus, low prime disposable pump-lung units with no direct gas-blood interface made of thromoresistant materials are required. There is urgent need for a non-toxic, non-antigenic plasma-like fluid capable of oxygen transport which can be used to prime extracorporeal circuits and replace blood lost during and after intracardiac and prolonged support procedures. Finally, the importance of pulsatile blood flow requires further study since there is accumulating evidence that such a flow pattern enhances organ function under perfusion conditions.



## Necrology

NILES L. PERKINS, M.D., M.P.H.

July 1, 1919-April 24, 1971

Dr. Niles L. Perkins of Bowdoinham was tragically drowned April 24, 1971, in the Miramichi River while on a fishing trip. He was the Executive Director of the Penobscot Bay Medical Center in Rockport.

Dr. Perkins was responsible to a great extent for all the Federal and State grants that have been awarded the Medical Center for construction and planning and development purposes. The total as of this date is \$1,747,000.00.

In addition to being executive director of the Medical Center, he was a consultant for both the Maine Health Facilities Planning Council and the Southern Maine Comprehensive Health Association. His affiliations were many: the American Medical Association, the Maine Medical Association, the Cumberland County Medical Society, American Public Health Association, American Public Welfare Association, Alpha Omega Alpha Medical Honor Society and the Maine State Selective Service Board of Appeals.

Dr. Perkins' education was as varied as his experience in the health planning field. He first went to the University of Maine to study mechanical engineering, later transferred to Bowdoin College where he received a B.A. degree in 1942. He then decided on a medical career and graduated as an M.D. (Cum Laude) from Tufts College Medical School. He interned at Maine General Hospital in Portland and served his residency in Internal Medicine and Cardiology at the Maine Medical Center in Portland.

To complete his education, he studied Social Welfare Policy

at the University of Chicago and became Master of Public Health at the Harvard School of Public Health.

Prior to coming to the Penobscot Bay Medical Center, Dr. Perkins had been Director of the Bureau of Medical Care of the Maine Department of Health and Welfare, heading the Division of Health Facilities Planning Program, the Division of Hospital Licensing, the Division of Disability Determination. He organized and developed Maine's Medicaid Program, Maine's Comprehensive Health Plan, the Division of Emergency Medical Services and the Upper Kennebec Valley Regional Health Agency.

He is survived by his wife, Pearl, of Bowdoinham, a son, Niles Lee Perkins, Jr., of Waldoboro and a daughter, Mrs. Thomas Ward, of Yarmouth.

It is only fitting that the Board of Trustees of the PENOBSCOT BAY MEDICAL CENTER unanimously voted the following resolution:

RESOLVED: The Board of Trustees of the Penobscot Bay Medical Center herewith unanimously establishes the Dr. Niles L. Perkins Memorial Trust Fund. The purposes of this trust shall be the dedication of the Dr. Niles L. Perkins Memorial Medical Library in the new Penobscot Bay Medical Center and for continuing medical education programs so justified in the opinion of the Trustees, who shall number ten. Mrs. Niles L. Perkins shall serve as Honorary Chairman with three trustees of her choice; three physician members and three representatives of the service area of Penobscot Bay Medical Center.

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## County Society Notes

### CUMBERLAND

The 360th meeting of the Cumberland County Medical Society was held at the Stage Coach Inn on May 20, 1971. There were 64 members and guests in attendance. Following a pleasant Social Hour and Prime Ribs of Beef dinner, the meeting of the Society was called to order by the President, Dr. Lawrence Crane.

A letter from the Secretary of the Maine Medical Association was read, informing the Society that Dr. Arthur B. Woodman had retired from active practice and therefore was eligible for affiliate membership in accordance with the Maine Medical Association Bylaws, Chapter I, Section V. It was motioned, seconded, and voted that Dr. Woodman be made an affiliate member by the recommendation of the Cumberland County Medical Society. The vote was unanimous.

The second order of business was that of the membership application of Dr. Carl Jackson. Dr. Jackson's membership application was read for the second time on May 20, 1971 and it was moved, seconded, and voted that he be accepted into the Cumberland County Medical Society. The applications of Drs. Charles L. Long and Newell A. Augur, Jr. were read for the first time and were referred to the Credentials Committee for further follow-up.

A letter from Barbara Willette, Secretary of the Cumberland

County Association of Medical Assistants, was read. The Association requested an advisor from the Cumberland County Medical Society be made to their Association. Dr. Winton Briggs was nominated to fill this capacity and approval was given by the Society.

A discussion of the matters to come before the Maine Medical Association at the meeting in June were discussed by Dr. George F. Sager. It was recommended that the Delegates from the Cumberland County Medical Society accept the recommended changes in the Constitution and Bylaws of the Maine Medical Association at the meeting in June. The Cumberland County Medical Society recommends two names for representation in the new Councilor Districts. These names were Drs. Howard P. Sawyer, Jr. and Stanley B. Sylvester. It was recommended to the Delegates that the resolution to be presented by Hancock County be examined on its merits at the June meeting.

The next order of business was the recommendation that the Blue Cross-Blue Shield Plan be improved and it was voted 37-5 that the Society go to the BSD Contract.

Dr. Crane then introduced Dr. Richard C. Dillihunt who introduced the panel consisting of Mr. Raymond Franz, director of the National Medical Care; Mr. Jules Crems, director of the Jewish Home; Mr. Arnold Neustadt, director of Seaside Nursing Home. Each guest gave a short talk on the facilities

available and the care extended by their particular homes. There then followed a lively and constructive question and answer period which helped in some ways to clarify the Title 18 and Title 19 Program. Dr. James H. Bonney spoke to the gathered Society with regard to his obligations to the Title 18 and Title 19 Program.

Following this interesting meeting, the Society was adjourned by Dr. Crane.

DOUGLAS R. HILL, M.D., *Secretary*

#### KENNEBEC

The Kennebec County Medical Association met at the Jefferson in Waterville on April 15, 1971. Dinner was served to 52 members and guests.

The business meeting was conducted by the President, Dr. Paul A. Jones, Jr. The minutes of the March meeting were read and approved. Dr. Jafar Chafi of Augusta was elected to membership and the names of Drs. Robert L. Shelton and Paul J. Jabar, both of Augusta, were read as candidates for membership and referral to the Council.

Dr. Jones then introduced the scientific program entitled "The Physician's Assistant." Describing the MEDEX Program was Dr. Nicholas Danforth, Director of that effort at Dartmouth Medical School and Mr. David Lewis, Assistant Director of the Physician's Assistant Program at Duke University Medical School. This panel of speakers presented a lucid and well-illustrated description of this vital innovation in medical practice, which has already brought physician assistants to active training in our State.

The meeting was adjourned by Dr. Jones at 9:30 p.m.

FRANCIS A. SPELLMAN, M.D., *Secretary*

#### OXFORD

The Oxford County Medical Society met at the Bethel Inn in Bethel, Maine on June 2, 1971. We had a film presentation by a representative of Lakeside Laboratories on the subject of "Depression," followed by a business meeting, a social hour, and dinner.

Dr. Stephen Sokol had been admitted to the Society at a special meeting in January 1971. Three more applications were submitted since then, and were referred to the Councilors for review.

The Society decided to drop Dr. Charles M. Smith from its roll because of prolonged absence and information from a member that he did not intend to return to Maine.

The President, Dr. Peter B. Aucoin, appointed a committee of two (Drs. John B. Makin, Jr. and Adwaita K. Ganguli) to review the subject of Constitution and Bylaws for our county society.

STEPHEN B. DEWING, M.D., *Secretary*

#### YORK

The bimonthly meeting of the York County Medical Society was held on May 12, 1971 at the Webber Hospital in Biddeford, Maine. The Social Hour was held from 6:30 to 7:30 p.m. Dinner was served at 7:30 p.m. The business meeting followed. The featured speaker was James R. Castle, a representative from the Beacon Fund, who spoke on "Incorporation of Physicians." It was a fine talk and a very lively question and answer period followed. Dr. Harry B. Eisberg, President of the York County Medical Society, presided over the meeting. He thanked the committee in charge of arrangements which was composed of Drs. Thomas Anton, Conner M. Moore and Owen Dow. Carleton Davis, Administrator of the Webber Hospital, was the host.

The next item on the agenda was the unanimous election of four new members to the Society. These were Drs. Vernon G.

Begenau of Wells, Arthur M. Scott, Jr. of Kennebunkport, Vincent J. Hickey of Biddeford and Paul H. Derboven of Sanford.

The minutes of the last meeting were omitted because they were incorporated in the May issue of the York County Medical Society newsletter. It is of interest to present the members' acceptance of the newsletter by the Society. It was voted to continue it for it was felt that it was of considerable interest and value to the Society.

A short period of meditation was held in memory of our departed colleagues, namely, Louis Lesieur, M.D. and Eugene Wolfahrt, M.D. of Saco, Ray Whitney, M.D. of Cape Porpoise and Marcel Ouellette, M.D. of Sanford.

There was no old business to cover. Now to turn to other items of extreme importance. It was business pertaining to the county and state associations. This was presented by Dr. Carl E. Richards, our Delegate, and was in preparation for the House of Delegates meeting at the annual meeting of the Maine Medical Association at the Colony Hotel, Kennebunkport, in June.

The first item concerned the financial statement for 1970 and also the proposed budget for 1972. Another item concerns the myriad of drugs and literature which is being distributed by detail men, through the mail, at conventions, etc. Mention was made of a resolve to be sent to the American Medical Association concerning this and is to be presented by Hancock County at the meeting of the House of Delegates in June.

Indication was also made of the various chiropractic bills which were presented to the legislature and were passed by a 2-3 vote margin. However, it is anticipated that these will be defeated the next time around.

Peer review is upon us whether we like it or not. However, in anticipation of a government program, Dr. Richards suggested that it be set up on a county basis in order to offset this program.

A plan of reorganization of the Maine Medical Association was also presented and concerns the division of the Standing Committees into three groups. It calls for a division of Council or Districts into nine. This is of interest to us because York County would be separated from Cumberland County and we would have a Councilor of our own. Two nominees will be presented from each district and one will be elected. Dr. Richards was given a free hand to vote on these measures as he sees fit by the Society.

Other business consisted of a letter from Mrs. Robert Ficker, president of the Ladies Auxiliary, expressing a desire to have a combined meeting at the next meeting of the York County Medical Society, having the social hour and dinner together with separate business meetings to follow. This was approved in addition to the combined annual meeting in January.

The Society also approved of three donations of \$50.00 each which were presented to:

1. Camp Waban for Retarded Children.
2. York County Ladies Auxiliary to help defray the cost of their endeavors at the annual meeting of the Maine Medical Association at The Colony in June.
3. The U.S. Olympic Fund.

Your secretaries feel these are extremely worthwhile endeavors and that there should be more of it done in other areas.

A very worthwhile suggestion was made by Dr. Leopold A. Viger and was unanimously approved. It was the setting up of an information booth at the annual meeting of the Maine Medical Association. A committee will be appointed by our President, Dr. Harry Eisberg, to arrange for this.

The meeting was adjourned at 10:00 p.m. with everything in complete accord.

The next meeting will be held at the York Hospital, October 13, 1971 and will also be an evening meeting. The committee in charge of arrangements for this meeting is composed of Drs. Kenneth E. Leigh, Lawrence R. Hazzard and Charles W. Kinghorn.

There were 22 physicians and 3 guests present.

CHARLES W. KINGHORN, M.D., *Secretary*



## Letter to the Editor

To the Editor:

The V-D control division of the Maine Department of Health and Welfare is well aware of the increasing incidence of venereal disease and have given the problem a great deal of consideration. However, in spite of the Information and Education Program to alert and inform the public through mass media outlets including television and radio, these diseases are still rampant. The goals of the State's education program for the general public are, and I quote:

- "a. To bring about behavioral change which would reduce the risk of contracting a venereal disease;
- b. To facilitate recognition of venereal disease symptoms and prompt the individual to seek diagnosis and treatment; and
- c. To develop attitudes which favor cooperation with the case finding efforts of Public Health officials."

There are laws and regulations (Section 1094, 1095, and 1096 of the Maine Department of Health and Welfare) which should be adequate in reporting and enforcing the treatment of venereal disease. Authority to enforce treatment is given to the local health officer as well as the State Bureau of Health official with power to petition the District Court or the Superior Court. Any person violating Sections 1094 through 1096 shall be punished by a fine of not more than \$100 or by imprisonment for not more than eleven (11) months or both. In 1969, the 104th Legislative Session passed a law permitting physicians to treat V-D in a minor without parental consent or to inform parent of such treatment. This is also a step in the right direction.

It seems that the medical practitioner and the State Department of Health and Welfare have adequate rules and regulations

regarding the diagnosis, treatment, and follow-up care of venereal disease but the rate continues to climb. There must be a weakness or laxity in the responsibility of the physician or the Health and Welfare official or both. After discussing the subject with several physicians, it appears that the weaknesses are in two major areas: namely, neglect to report all cases which, incidentally, can be done by a code number, and secondly, neglect in adequate follow-up of patient and suspected contact or contacts. The former being the responsibility of the physician and the latter the responsibility of both the physician and the official of the local or State Health Department.

In an attempt to improve the deplorable V-D situation, the following suggestions are made:

1. Renew and increase the educational programs with particular emphasis on the teenagers.
2. Reinforce the physician regarding diagnosis, treatment, and follow-up.
3. Avoid failure to report ALL cases of V.D.
4. Make a determined effort to insure adequate treatment of patient with the cost being borne by the State in all needy cases, and reporting any non-cooperative individual.
5. Improve the effort to find and investigate all contacts and this may require additional competent Health Department Personnel.

This report is made with the sincere hope that curable and preventable diseases such as venereal disease will be reduced to a minimum in the State of Maine.

BENJAMIN L. SHAPERO, M.D.  
431 State Street  
Bangor, Maine 04401

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### DEPARTMENT OF HEALTH AND WELFARE

*Continued from Page 187*

offered \$50 for their services during the first six months, and were asked if they were willing to continue as Sentinel Physicians without remuneration. Three Sentinels wished to discontinue participation, but only two of them wished to be paid for the first six months. Twenty-one agreed to continue without payment, and only six of these

wished to be paid for the first six months.

In conclusion, it is felt that a Sentinel Physician System is a useful adjunct to other methods of reporting. An ideal system would also allow direct reporting of all physicians. We will continue to evaluate our reporting system in an effort to make it as meaningful and useful as possible.

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### FROM THE SECRETARY'S NOTEBOOK

*Continued from Page 190*

**Medical School for Maine** – As Dr. Manu Chatterjee, Coordinator of Maine's Regional Medical Program was unable to be at this meeting, Dr. Hanley reported that \$75,000 was received from the State to implement the study on the Medical School for Maine. This money will be matched with funds from other sources, primarily Federal. He reported that they have an on-going program of \$155,000 and the first interim report of progress is coming out July 14th.

**Special Memberships** – The recommendations for special memberships were approved. (The list of members recommended for Special Membership was included in the Delegate's folder.)

**Stenographic Record** – A summary of the proceedings of the House of Delegates has been sent to the county presidents and secretaries and to the delegates and alternates of each county society. (The complete report is on



file in the Association's office in Brunswick, where it is available to any member of the Association.)

#### GENERAL ASSEMBLY

The General Assembly of the Maine Medical Association was called to order by the President, Charles R. Glassmire, M.D. on Sunday, June 13, 1971.

As there was no business to come before the General Assembly, the meeting was adjourned at 4:20 P.M.

PATRICIA A. BERGERON  
*Secretary-Treasurer, M.M.A.*

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# The Journal of the Maine Medical Association

Volume Sixty-two

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Number 9

## Direct Myocardial Revascularization Using Saphenous Vein Bypass Grafts\*

JEREMY R. MORTON, M.D.\*\* and GENE A. GUINN, M.D.

Atherosclerotic coronary artery disease is the greatest single cause of death among Americans today.<sup>1</sup> An intensive effort to perfect an effective therapeutic approach to this disease has resulted in the vein bypass graft procedure currently being evaluated.

Surgical therapy of angina pectoris was initially directed toward amelioration of symptoms by sympathetic denervation of the heart.<sup>2</sup> Later, several indirect revascularization procedures were developed by Beck<sup>3</sup> which were designed to stimulate ingrowth of collateral vessels across the epicardium. Vineberg<sup>4</sup> introduced the internal mammary artery implant in 1952 which represented a somewhat more direct approach to revascularization. Much of the stimulus for the subsequent widespread employment of this technique during the last decade was the demonstration by Sones<sup>5</sup> of patent anastomoses between the implanted artery and the coronary arteries. Results varied widely with this technique, however, and the delay between the surgical procedure and development of effective vascular channels to the coronary circulation was of concern. Coronary endarterectomy and patch graft angioplasty was subsequently employed by several groups,<sup>6,7</sup> but was applicable in only a small number of patients with discrete lesions in the proximal portions of the coronary arteries.

Johnson<sup>8</sup> and Favaloro<sup>9</sup> reported in 1969 that bypass grafts using autogenous veins could be successfully constructed between the aorta and distal coronary arteries with establishment of immediate, direct myocardial revascularization. A justifiable wave of enthusiasm has been

generated amongst surgeons and cardiologists alike by subsequent arteriographic confirmation of continued patency in a large percentage of these grafts, and striking clinical improvement following surgery.

This paper reports our experience with the first 82 patients undergoing this procedure at Ben Taub General Hospital and Veterans Administration Hospital in Houston, Texas.

### TECHNIQUE

The coronary arteriograms were reviewed jointly by the cardiologist and surgeon to determine the sites and severity of the occlusive lesions. The majority of studies demonstrated multivessel disease. Early in our experience, the most severely diseased vessel in which a patent distal segment could be demonstrated arteriographically, was selected for bypass. The right was selected most often in preference to the left anterior descending because of its being technically an easier vessel with which to work. With increased experience, however, it became apparent that anastomoses could be successfully performed on all of the coronary arteries and that better results could be obtained with multiple bypasses.

The operations were performed through a median sternotomy incision using total cardiopulmonary bypass under normothermic conditions with hemodilution and a disposable bubble oxygenator. The oxygenated blood was returned to the patient through a cannula placed in the ascending aorta. Decompression of the left ventricle was accomplished by a vent in the left atrium. In extremely ill patients who were unable to tolerate general anesthesia, the femoral artery and vein were cannulated under local anesthesia and partial cardiopulmonary bypass was begun before induction of anesthesia.

Ischemic cardiac arrest was produced by occluding the

\*From the Cora and Webb Mading Department of Surgery, Baylor College of Medicine and The Ben Taub General and Veterans Administration Hospitals, Houston, Texas.

\*\*Present address: Maine Medical Center, Portland, Maine 04102.

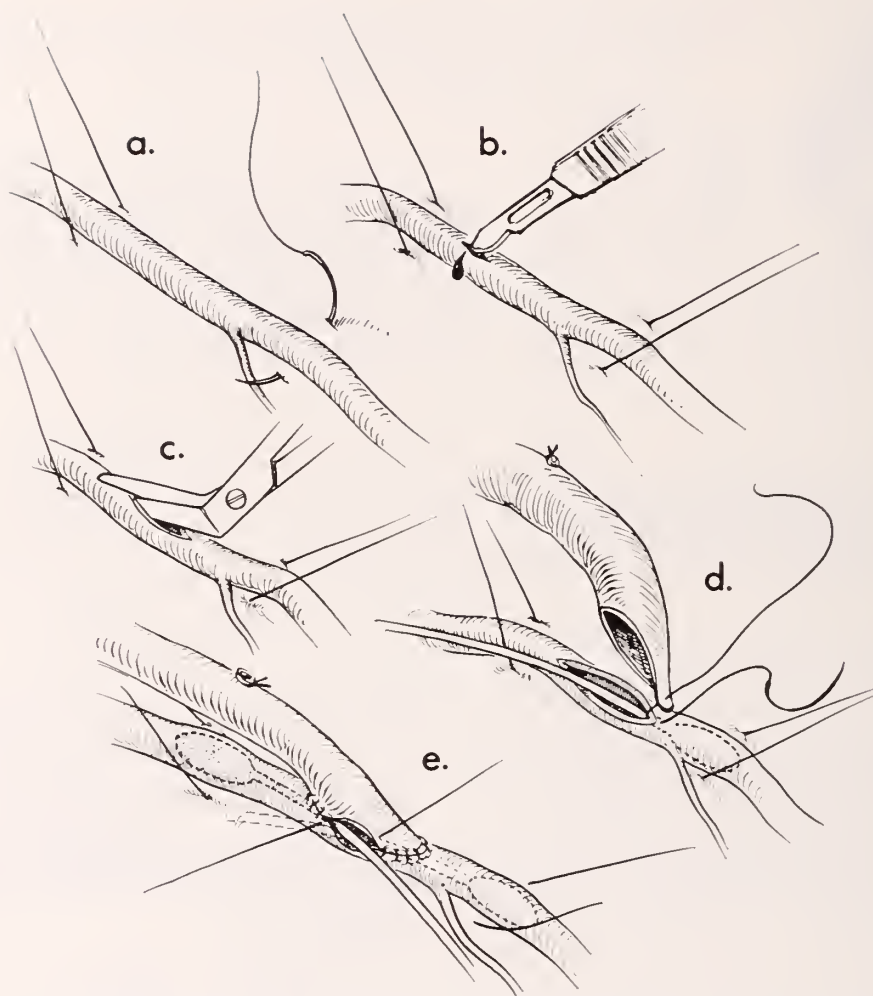


Fig. 1. Drawings illustrating technique employed in performing distal coronary anastomosis. See text.

aorta, which provided a dry, motionless field in which to expose the distal coronary vessels and perform the anastomoses. When multiple grafts were constructed, the aortic clamp was released after completing each distal anastomosis. Cardiac action was allowed to recover while the proximal anastomosis between the graft and the ascending aorta was performed. Duration of ischemic arrest was kept to a minimum by employing it only during the portions of the procedure when a motionless field was required.

An orderly plan for revascularization was followed, based upon the preoperative assessment of the occlusive lesions. When involved, the left anterior descending artery was approached first. The vessel was palpated and sling sutures placed around a segment beyond the last obstructing lesion Fig. 1-a. The epicardium over the vessel was carefully incised with a scalpel. The artery itself was then discernible and a small incision was made into its lumen Fig. 1-b. The arteriotomy was extended with fine scissors (Fig. 1-c) and the vessel explored proximally and distally with a vascular dilator. After shaping the

end of the vein graft appropriately, an end-to-side anastomosis was performed between the vein and the artery using a continuous suture of 6-0 polypropylene Fig. 1-d. The artery at the proximal and distal ends of the anastomosis were checked for patency with the dilator before the anastomosis was completed Fig. 1-e.

The right coronary artery was usually approached just proximal to its bifurcation on the inferior surface of the heart. Fig. 2-a. If one of the major branches was stenotic, the arteriotomy was extended across the stenosis (Fig. 2b-c) and the end of the vein graft acted as a patch to widen this area. When the circumflex artery was involved, the anastomosis was usually made to the posterior descending branch of this vessel which was exposed by rotating the apex of the heart anteriorly and to the right. The proximal ends of the vein grafts were sutured individually to the ascending aorta using an exclusion clamp Fig. 3. Occasionally a Y graft was constructed to two coronary arteries using one aortic anastomosis. The vein grafts were arranged so that they lay comfortably without kinking.



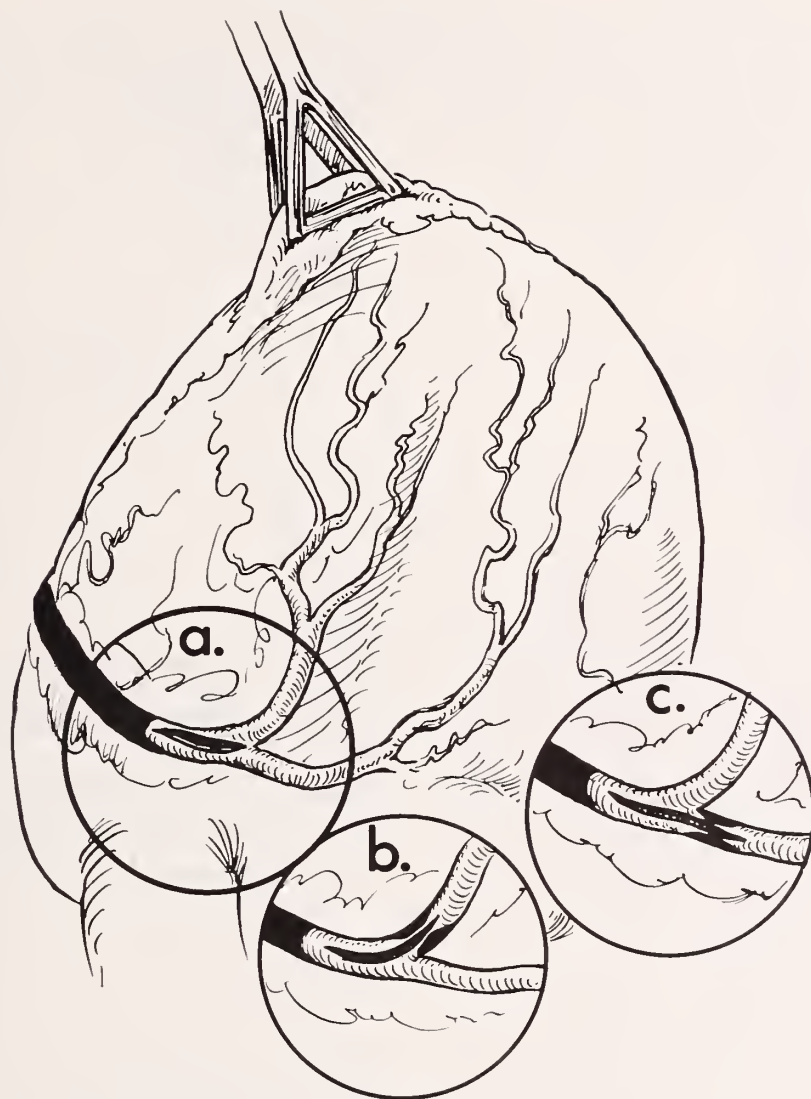


Fig. 2. Drawing illustrating approach to distal right coronary artery and placement of arteriotomy.

#### CLINICAL MATERIAL

A total of 82 patients underwent coronary artery bypass between January 1970 and June 1971. The majority of the procedures were performed by Senior Residents in Thoracic Surgery. Seventy-nine of the patients were men and three were women. Their ages ranged from 31 to 64 with a mean age of 50 years. In 79 of the patients, the principle indication for surgery was severe angina and 15 of these suffered from angina at rest. The three patients without angina had had vulvular disease and were found incidentally to have coronary artery occlusion. Forty-eight of the patients presented with a past history of documented myocardial infarction. Congestive heart failure was present in 24 of the patients and represented a significant factor in the results, since all of the deaths occurred in this group.

In 15 patients, there were significant associated diseases which are listed in Table 1. As noted, there were seven patients with significant valvular lesions and six with

ventricular aneurysms. Previous internal mammary implants had been performed in two patients and two other patients had had previous unsuccessful coronary bypass grafts.

Although the majority of patients showed electrocardiographic evidence preoperatively of infarct or ischemia, 20 had normal electrocardiograms.

Selective coronary arteriography revealed severe occlusive disease of one vessel in 15 patients, two vessels in 35 patients, and all three vessels in 32 patients. A total of 64 completely occluded vessels were demonstrated in 59 patients. More than half of the patients in the series had complete occlusion of the right coronary artery and 30 percent had complete occlusion of the left anterior descending as illustrated in Table 2. Left ventricular function was evaluated by cineventriculography and by measurement of left ventricular end diastolic pressure. Abnormal ventriculograms were seen in 40 patients, 28 of which demonstrated generally poor contractility while

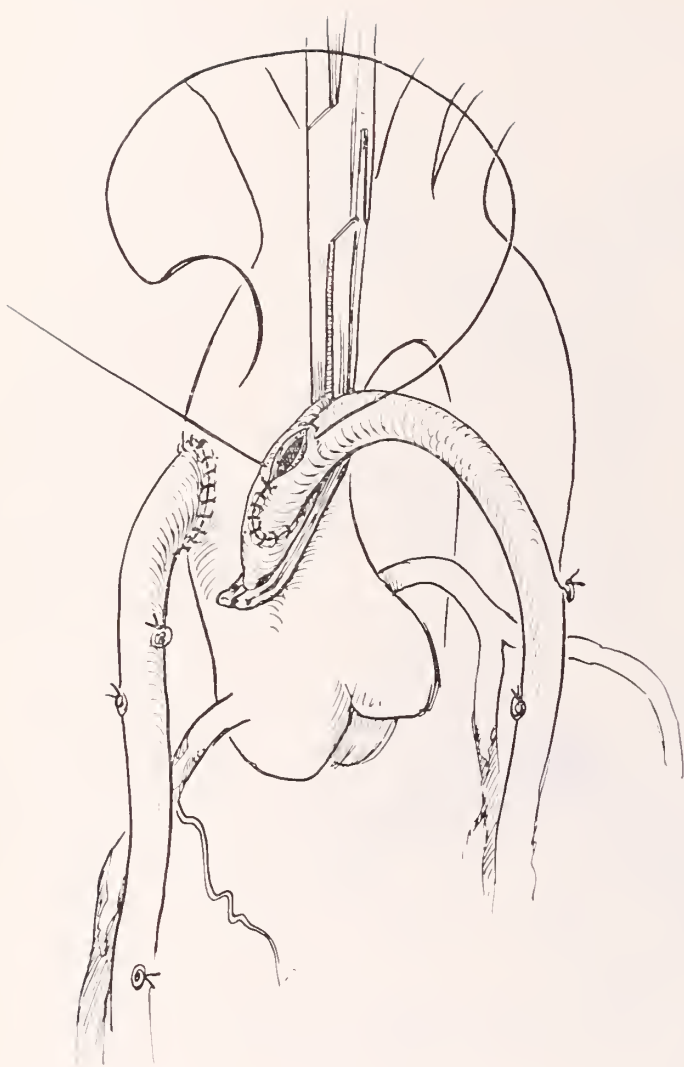


Fig. 3. Drawing illustrating technique employed in performing proximal anastomosis to aorta. See text.

the remaining 12 showed an area of paradoxical motion or aneurysm. The left ventricular end diastolic pressure was elevated in 38 patients.

The operative procedures performed on these patients are outlined in Table 3. Forty-nine patients had single bypass grafts, 37 of which were to the right coronary artery. Two vessels were bypassed in 30 patients and all three were bypassed in three patients. Seven patients underwent concomitant valve replacement, six had resection of a ventricular aneurysm and in one an atrial septal defect was closed.

#### MORTALITY AND COMPLICATIONS

Seven patients died within 30 days of surgery for an immediate mortality of 8.5 percent. All of these patients represented poor surgical risks with significant congestive failure preoperatively. Four had concomitant valve replacement and one suffered cardiac arrest prior to induc-

TABLE 1

ASSOCIATED DISEASES	
Ventricular aneurysm	6
Diabetes mellitus	5
Aorto-iliac occlusive disease	3
Chronic obstructive lung disease	3
Aortic valve disease	4
Mitral valve disease	3
Atrial septal defect	1
Duodenal ulcer	1

TABLE 2

ARTERIOGRAPHIC FINDINGS			
Vessel involvement			Number of patients
Single			15
Double			35
Triple			32
Extent of disease	RCA	LAD	Cx
Total occlusion	46	26	2
75-100% occlusion	20	25	15
50-75% occlusion	3	10	12
RCA: Right coronary artery			
LAD: Left anterior descending coronary artery			
Cx: Circumflex coronary artery			

TABLE 3

TYPE OF OPERATION PERFORMED	
Coronary bypass	No. of patients
Single	49
Double	30
Triple	3
Additional Surgery	
Valve replacement	7
Aortic	4
Mitral	3
Ventricular aneurysm resection	6
Atrial septal defect repair	1

TABLE 4

COMPLICATIONS	
Respiratory insufficiency syndrome	3
Wound infection	2
Cerebrovascular accident	1
Postoperative bleeding	1
Post pericardiotomy syndrome	1
Pneumonia	1

tion of anesthesia. There were three late deaths occurring between one and four months postoperatively. One patient died of a stroke and two died of progressive congestive heart failure and were found to have occluded grafts at autopsy. The immediate mortality for patients undergoing coronary bypass alone was 4.0 percent and the immediate and late mortality together in this group was 7.2 percent. No deaths occurred in the group of patients presenting with angina in the absence of congestive failure.

Non-fatal complications were few and are listed in Table 4.

TABLE 5

POST-OPERATIVE ARTERIOGRAPHIC STUDIES			
No. of patients operated	No. of patients restudied*	No. of vessels bypassed	Results
82	30	18 single	9-open
			9-occluded
		11 double	2 both occluded
			4 one patent
			5 both patent
		1 triple	all patent

\*Twenty of these patients were restudied because of recurrent symptoms which may in part account for the observed occlusion rate.

### RESULTS

Every surviving patient in the series noted significant clinical improvement postoperatively. This was evidenced not only by absent or diminished anginal pain but also by a decrease in congestive failure. Fifty-eight patients were completely relieved of their angina while 14 noted significant improvement. Four of the patients with initial complete relief of angina noted recurrence of symptoms between one and four months postoperatively and were subsequently found to have occluded grafts.

Most of the patients with congestive failure have continued to take digitalis postoperatively but the majority have noted an increase in exercise tolerance and have required smaller amounts of diuretics.

Thirty patients have been restudied postoperatively (mean interval from surgery 125 days). The majority were restudied because of recurrent symptoms and the remainder to evaluate the effectiveness of the procedure. The results of these studies are shown in Table 5. There appears to be close correlation between the observed clinical result and graft patency since most patients studied in whom angina had been completely relieved, were found to have at least one functioning graft. Even though most patients were subjectively improved, no correlation was noted between left ventricular end diastolic pressure at rest and graft patency.

### COMMENTS

The aorto-coronary bypass procedure has been enthusiastically accepted because it represents a relatively simple, direct method of immediate revascularization and has been accompanied by a remarkably low operative mortality and significant clinical improvement. The success of this method when compared to earlier revascularization procedures is due in part to utilization of the bypass technique popularized by DeBakey<sup>11</sup> in which circulation is restored beyond the area of obstruction without interfering with the existing vascular channels. The method

also provides immediate improvement in myocardial blood supply at the time of operation.

Reports from this and other centers<sup>12,13,14</sup> with a combined experience of over 2,000 cases have demonstrated a mortality of under 5 percent for bypass procedures alone and a graft patency rate of between 80 and 90 percent. Marked subjective improvement has been noted in virtually all patients with at least one patent graft and the majority of patients previously debilitated by angina have returned to active lives. Objective evidence of improved ventricular function has been observed by Rees, et al<sup>15</sup> who noted decrease in end diastolic volume, improvement in contractility and increase in ejection fraction in those patients having patent grafts. A decrease in ventricular function was observed when the grafts were occluded. Although the follow-up period is relatively short, evidence for continued long term patency of these grafts has been presented by Johnson et al<sup>16</sup> who have shown that 86 percent of grafts open at two weeks were still patent 2 years after surgery.

Flowmeter studies performed at the time of surgery by Johnson et al<sup>14</sup> revealed blood flows as high as 185 cc. per minute through the grafts with a mean flow of 63 cc. per minute in the grafts studied. The safety of employing ischemic cardiac arrest during the performance of the distal anastomoses has been documented by Reul et al<sup>17</sup> who reported on 413 patients using this technique with an overall mortality of 6.3 percent. Comparing these patients with a group of 80 of their patients with less severe disease in whom ischemic arrest was not used, they found that the mortality and complication rates were the same and that half as many late graft occlusions occurred in the ischemic group.

The use of multiple grafts in patients with diffuse disease has gained increasing popularity and has been associated with improved results.<sup>14</sup> The arteriographic finding of a totally occluded artery with no filling of its distal branches was initially thought to preclude the pos-



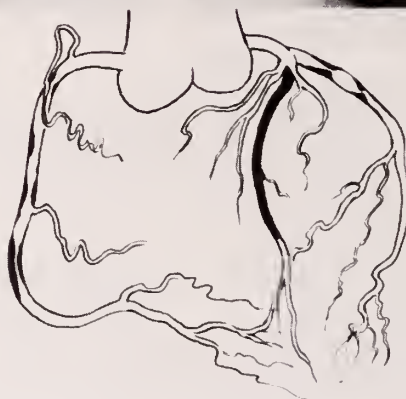


Fig. 4. Drawing and coronary arteriograms illustrating occlusive disease of the three coronary arteries before and after vein bypass.



Fig. 5. Operative photograph showing completed bypass grafts to right and left anterior descending coronary arteries.

sibility of bypass. Exploration of these vessels, however, has revealed that the majority of them are open distally and can be successfully revascularized.<sup>18</sup>

Gas endarterectomy using carbon dioxide has been employed in conjunction with vein bypass in some centers<sup>19</sup> for totally occluded vessels but this technique has not enjoyed wide acceptance because of the inability to visualize directly the distal limits of the intimal dissection.

Recent myocardial infarction has become a contraindication to bypass surgery because of the high mortality associated with early attempts to operate on this group of patients. Recently some success has been achieved per-

forming emergency coronary bypass procedures within a few hours of myocardial infarction when the patient's condition appears to be deteriorating on medical management. Further advances in the development of temporary circulatory support systems may make surgery on these patients more feasible in the future.

Patients presenting with the sudden onset of severe unremitting angina and electrocardiographic changes of ischemia, frequently termed pre-infarction angina, are often found on catheterization to have nearly complete occlusion of the left anterior descending coronary artery. Operation on a semi-emergent basis in this group of pa-





Fig. 6. Operative photograph showing bypass grafts to left anterior descending and circumflex coronary arteries using Y technique.

tients has been associated with dramatic results in most instances.<sup>20</sup>

Evaluation of the bypass procedure in the treatment of arteriosclerotic coronary artery disease has proven difficult. Although symptomatic improvement with relief of chest pain is a worthy objective, this may often be accomplished by medical therapy with considerably less discomfort to the patient. Further, it has been shown that even sham operations may produce relief of anginal symptoms and may result in increased exercise tolerance.<sup>21,22</sup> It is believed, however, that coronary artery bypass provides more than symptomatic relief and that further stud-

ies on ventricular function and long term survival following bypass surgery will demonstrate a clear cut improvement in the natural history of the disease.

#### SUMMARY

A group of 82 patients having aorto-coronary bypass grafts performed in an 18 month period is presented. All patients had angina and in addition, 24 had varying degrees of congestive heart failure. Patients with severe symptoms who had more than 50% stenosis of one coronary artery were considered candidates for surgery. Most patients having surgery, however, had involvement of the



entire coronary arterial bed. Single bypass was done on 47 patients with the right coronary artery being used in 37. Double bypass was performed in 23 patients and 3 had triple bypasses. Increasing experience with the procedure had resulted in a greater number of multiple bypasses. The operative mortality for coronary bypass alone was 4.0 percent. A higher mortality was observed in patients undergoing valve replacement in conjunction with coronary bypass. No deaths were encountered in the patients having angina alone without congestive failure.

The surviving patients have all noted subjective improvement in their angina. Follow-up cardiac catheterization in 30 patients has demonstrated close correlation between graft patency and complete relief of angina but has not documented a similar correlation with left ventricular end diastolic pressure. Based on our experience the bypass procedure appears to hold great promise as an effective form of therapy in arteriosclerotic coronary occlusive disease. Only long term studies, however, can provide the objective data needed to prove the true value of the method.

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## MAINE HEART ASSOCIATION ANNUAL SCIENTIFIC SESSIONS

WEDNESDAY, OCTOBER 13, 1971

SHERATON EASTLAND MOTOR HOTEL  
PORTLAND, MAINE

\* \* \* \*

EUGENE H. DRAKE MEMORIAL LECTURE

by

IRVING S. WRIGHT, M.D., Cornell University Medical College

"NEW DEVELOPMENT IN ANTICOAGULANT THERAPY"

# An Historical Sketch of Medical Education in Maine

RICHARD KAHN, M.D.\*

"The establishment of medical schools is a prolific source of discord in the profession." Daniel Drake (1785-1852)

Almost as topical as poverty, pollution and pornography has been the question of medical education in the State of Maine. Ever since the Medical School of Maine closed in 1921, the idea of reestablishing it has been a tantalizing topic of discussion. Now, at a time when a new medical school is being seriously considered, it might be interesting to review some of the historical aspects of medical education as it has developed in Maine since the 18th century.

Thacher describes medical education in Maine prior to statehood in 1820 as follows: "This district of Massachusetts, before the separation, possessed little claim to the merit of contributing to the improvement of medical science; a scattered settlement over an extensive country affords no facilities of union and enterprise in scientific pursuits."<sup>7</sup>

An examination of the educational background of three physicians practicing in Maine in the 18th century will give us some insights into the nature of medical training in those early days. Dr. Nathaniel Coffin (1716-1766) came to Falmouth Neck in 1738 from his native Newburyport where he had studied the physic with Dr. Tappan. Treating patients tomahawked and scalped by the Indians was a common problem in his practice. His on-going medical education was provided by ship surgeons, who were welcomed at the home of Dr. Coffin. These guests provided him with early information on discoveries in the science of medicine and surgery; they often accompanied him on visits to his patients.

His son, Nathaniel, later to become the first president of the Maine Medical Society,\*\* was born in 1744. After completing his preparatory medical education with his father, he embarked for London at 18 years of age. There he studied for three years at Guy's & St. Thomas' Hospital under John Hunter and other notables. At the age of twenty-one he began practicing in Portland. Though his father had "traveled with his healing art as far as forty miles to the west and fifty to the east," the young Dr. Coffin confined his labors predominately to his native town, which had grown rapidly. The honorary degree of Doctor of Medicine was conferred upon him by the Medical School of Maine prior to his death in 1828.

American medical education in the early 19th century was in its infancy. Most physicians, like the Drs. Coffin, were trained by the preceptorship method. In Oxford County, Maine between 1790 and 1840, 5% of practicing

physicians had A.B. degrees and only 35% were medical school graduates.<sup>6</sup>

Dr. Moses Appleton practiced in Teconnet Village (later incorporated into the town of Waterville) beginning in 1796. He completed what might be considered the ultimate in a formal medical education of the day. After graduating from Dartmouth College, he enrolled in the fifth class of Harvard Medical College in 1793. He completed the prescribed two year course of lectures and demonstration, which were taught by a faculty of three. He obtained a Bachelor of Medicine and, after a short preceptorship, was examined by a committee of the Massachusetts Medical Society; he received a Doctor of Medicine in 1796.

In 1819, Bowdoin College President Allen corresponded with Dr. Nathan Smith, founder of Dartmouth Medical School, regarding the improvement of medical instruction in Maine. Dr. Smith responded, "I think after what experience I have had, we could form a medical school that would, in point of real utility, equal any in the country. In a new state like Maine where neither habit nor parties have laid their ruthless hands on the public institutions, and where the minds of men are free from their poisoning influence, everything is to be hoped for. . . ."<sup>4</sup> The Medical School of Maine was established by the first legislature of Maine on July 27, 1820, becoming the nation's eleventh medical school.

<i>Medical School<sup>7</sup></i>	<i>Date Opened</i>	<i>Enrollment 1825-1826</i>
University of Pennsylvania	1765	480
Medical School of New York	1768	196
Medical School of Harvard College	1782	130
Medical School of Dartmouth College	1798	80
College of Medicine of Maryland	1807	215
College of Physicians & Surgeons of The Western District of New York	1812	120
Medical School of Yale College	1813	82
Medical College of Ohio	1818	22
Vermont Academy of Medicine	1818	124
Medical School of Transylvania	1819	235
Medical School of Maine	1820	60

The American medical schools followed the model of continental Europe rather than Great Britain in that there were few definite entrance requirements and teaching was almost exclusively by lectures. In 1828, James Thacher said, "Although there is no uniform standard of attainments established, in order to graduation, in most of our schools it is required, that before a student can be admitted to an examination for a degree, he must have

\*Maine Medical Center, Portland, Maine 04102.

\*\*Maine Medical Society 1820-1845.

Maine Medical Association 1853-



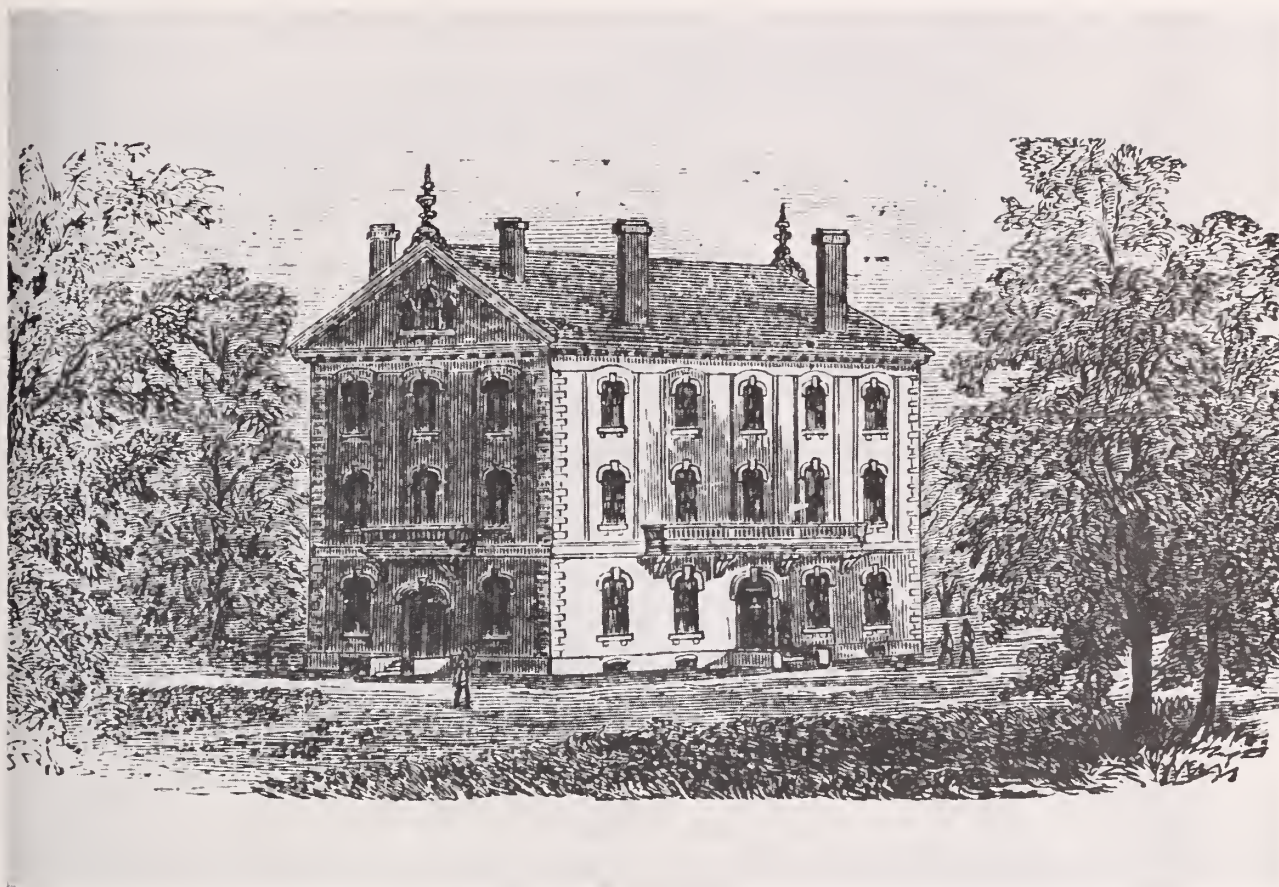


Fig. 1. Adams Hall, at Bowdoin College, was erected for the Medical School of Maine in 1860.

attained to the age of twenty-one, have studied three years with some regular physician, attended two full courses of lectures on the different branches of medicine, and, if he has not enjoyed the advantages of a collegiate education, he must furnish satisfactory evidence of having made respectable classical attainments; and particularly that he has acquired a competent knowledge of the Latin and Greek language, has studied mathematics, natural and experimental philosophy, geography, and belles lettres. In several of our new schools it is required that he shall have attended the clinical practice of some infirmary for a specified term. It is also required that, before he can receive his degree, he must pass a close examination in the different branches of medicine, and write and defend a thesis on some medical subject."

The Medical School of Maine was to be under the control of the Trustees and Overseers of Bowdoin College; \$1,500 was granted by the State to provide books and apparatus, then \$1,000 annually for general expenses. Dr. Smith gave the first series of lectures in the spring of 1821. There were 21 students that first year, 49 the second year, and then an average of 80 per year through 1894. The medical school was housed "temporarily" in Massachusetts Hall until Adams Hall was constructed in 1860-61 (Fig. 1). This building served the medical

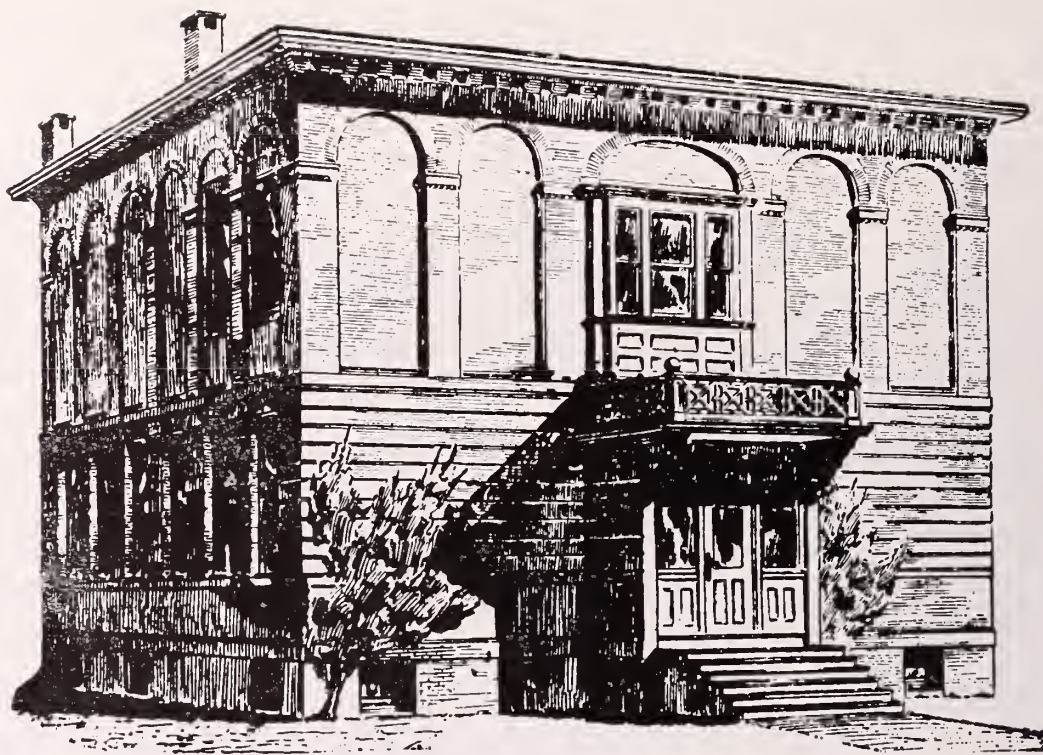
school until it closed 60 years later. The medical faculty and other leading physicians saw the need for a general hospital at Brunswick "both for the insane and for surgical cases requiring especial skill. . . ." Though the legislature provided an act for incorporation of such a hospital in 1826, it repeatedly refused to fund it. In 1834, the annual grant of \$1,000 from the State was discontinued.

The number of courses increased and with it the length of each term:

<i>Date</i>	<i>Length of Term</i>	<i>Terms Required for Graduation</i>
1825	12 Weeks	2
1856	16 Weeks	2
1886	20 Weeks	3
1904	36 Weeks	4

Admission requirements gradually became more stringent. During the 19th century, "evidence of a good English education" gave way to "a thorough secondary education including Latin, physics, and chemistry." In 1902, the requirements were made equal to those of the "academic departments" of the college. It is interesting that for years the academic students at Bowdoin considered the medical students inferior because entrance





#### SCHOOL ROOMS.

Fig. 2. The Medical School Building, built in 1900, served both the Medical School of Maine and the Portland School for Medical Instruction.

requirements and term length at the medical school were less than at the college. In 1906, an absolute requirement of one year of chemistry was added and in 1912 admission had to be preceded by at least one year of physics, chemistry, biology and French or German in a reputable college. Finally, in 1916, the students were required to have successfully completed two years of college before entrance to medical school.

At the Portland School for Medical Instruction, incorporated in 1858, the admission requirements were also increasing, though not to the same extent. This school was organized in accordance with the resolution adopted by the AMA in 1854 "cordially approving of the establishment of private schools to meet the increased desire on the part of a respectable number of medical students for a higher grade of professional education than can usually be acquired by 'reading medicine' under the direction of a single instructor."<sup>2</sup> Certificates of attendance served in lieu of time spent in the study of medicine under a practitioner. The school was housed in Portland at 174 Middle Street until 1863 when it was moved to 122 Federal Street over the store of Mr. Edward Mason, apothecary. From 1874 to 1900, it occupied the third and fourth floors of the Canal National Bank Building at 88 Middle Street. After 1900, it shared with the Medical School of Maine the new "Medical School Building" on Chadwick Street next to the Sebago Reservoir (Fig. 2). "This build-

ing, used in conjunction with the Medical School of Maine, has excellent recitation rooms, laboratories and dissection rooms. The nearness to the Maine General Hospital make both more convenient to the students."<sup>2</sup>

The Maine General Hospital admitted its first patient in 1874 (Figs. 3, 4). Prior to this time, only "paupers, lunatics and seamen"<sup>3</sup> could obtain hospital care in the almshouses, State Asylum in Augusta, and U. S. Marine Hospital respectively. Many of the original staff of the Maine General Hospital were on the faculty of the Medical School and the Portland School for Medical Instruction. The faculties were practicing physicians who gave part of their time to teaching. There were strong feelings among them that the medical school should be moved to Portland because of the clinical advantages of its hospital and dispensaries. This would also be a convenience to those doctors who practiced in Portland and taught at the medical school in Brunswick. In 1894, the Boards voted that the last two years of the course would be given at Portland.

The gradual decline of the medical school began at the turn of the century. Dr. Abraham Flexner's report on "Medical Education in the United States and Canada" was published in 1910. "It is unnecessary," wrote Dr. Flexner, "to prolong the life of the clinical departments of

<sup>2</sup>Dr. Tewksbury's 1867 presidential address to the MMA.



Fig. 3. An 1872 artist's sketch of the proposed Maine General Hospital.

Dartmouth, Bowdoin and Vermont. They are not likely soon to possess the financial resources needed to develop adequate clinics in their present locations.”<sup>3</sup> In 1918, the number of potential students drawn into World War I combined with the increasingly stringent entrance requirements to produce a sharp decline in enrollment. That year there were only seven in the entering class, with a total enrollment of forty-three. The Council for American Medical Education had decided that a Class A school should have an income of at least \$25,000 a year exclusive of fees. The Medical School of Maine had a deficit of \$7,000 per year at this time and was to be dropped from Class A rating as of the June 1921 commencement. For all these reasons, and amid great controversy, the Trustees voted to close the school in June 1921. The Maine Medical Association and many physicians and college alumni were opposed to this move. President Sills of Bowdoin, who had worked hard to save the medical school conceded that, “The loss . . . is nothing compared with the impairment of reputation, both of the school and the college, which would have followed the inability to maintain the school properly.”<sup>4</sup>

Maine has continued to contribute to the education of her physicians, however, through the intern and residency programs at Maine Medical Center (formerly Maine General Hospital). Since its first house pupils were accepted, the hospital has trained at least 559 doctors, and of these 201 are practicing in Maine at the present time. This is an impressive statistic and a compelling argument for supporting and enlarging Maine's facilities for medical education.

There have been several attempts to reestablish a medical school in Maine, but until recently all have assumed the need for an expensive physical plant of laboratory and research facilities. Many physicians and educators believe a medical school can be created by taking full advantage of the facilities which already exist in Maine. The basic sciences could be taught at our university and colleges, and the clinical training provided at the medical centers and community hospitals. The interaction between staff physicians and students would be mutually beneficial, providing a valuable source of ongoing education for both and thereby improving the quality of medical care. The legislature has already provided substantial funding for the further exploration of this practical and exciting concept in medical education.

Returning to history for a moment, there is an interesting parallel in a statement made by President Hyde of Bowdoin College in 1910: “If, however, there is still room, as most of us believe there is, for schools which while adequately equipped to avail themselves of all practical results of medical research, yet make it their chief aim to train men to use those results in the actual practice of medicine, there will always be a field of usefulness for schools like the Medical School of Maine.”<sup>4</sup>

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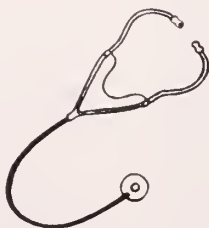
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Fig. 4. The Maine General Hospital as it existed in 1874.

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# Early Diagnosis and Treatment of Head and Neck Cancer

JOHN E. KNOWLES, M.D.

At a general surgical conference, the experience at the Maine Medical Center was reviewed in terms of numbers of head and neck cancer cases, and the 5-year survivals were compared to the national average. The findings may be summarized by saying that head and neck cancer is common in our area, and early diagnosis is the key to a good five year prognosis. A brief discussion of head and neck cancer disease had best be limited to epidermoid carcinoma which represents the pathology in perhaps more than 90% of the cases.

Carcinoma in this region has a marked predilection for men in their fifties and sixties, heavy smokers and heavy drinkers. In short — this is Marlborough Country! One cigarette manufacturer states "you have come a long way baby" and goes on to urge women to assert their liberation gains by sporting a particular brand, i.e., "Virginia Slims." In all likelihood, women's liberation and subsequent smoking habits will allow them to join the previously almost exclusive ranks of male head and neck cancer patients: Epidermoid carcinoma above the clavicle tends to remain localized to the resectable regional nodes and thus, stage I lesions have a surprising cure rate ranging from 70% to 90%. It is perhaps unfortunate that these early lesions give little to no pain and occur in people who are less apt to seek medical attention for a lump in the neck, persistent mild sore throat, husky voice, nasal obstruction, blood tinged sputum or blood tinging of nasal or ear secretions. When the rugged individual depicted in the cigarette ads has a small oral or skin lesion, this seems to be of little concern.

As a part of the routine physical examination, how many of us really see the whole tongue, floor of the mouth, tonsil fossi, anterior nasal airways or look under the glasses or behind the ears for skin lesions much less feel the neck for those hard, painless upper jugular nodes that may be the only evidence of many months of disease located in those hidden corners of the nasopharynx, hypopharynx, base of tongue and larynx visible only to the rare fellow who owns a head mirror and laryngeal mirror.

Cancer of the tonsil confined to the fossa, that is Stage I lesion, has a 5-year cure rate of 90% yet extension into the tongue or neck nodes with fixation, Stage II and III lesions would reduce the cure rate from 90% to 9%. As with epidermoid tumors in other regions, a second primary tumor was found in 21% of 137 patients with tonsil cancer. In these same 137 patients, the tonsil was sufficiently symptom free to allow extension to neck nodes in 2/3 of the cases before any medical attention was sought. I urge any general surgeons and general practitioners who perform tonsillectomies to specifically label the right and left tonsils in adult cases. Occasionally we are faced with a therapeutic dilemma when a surprise diag-

nosis is forthcoming yet we don't know which side the neoplastic lesion came from.

Floor of the mouth cancer has been a uniformly fatal condition in our experience when located in the midline of the floor of the mouth, but fortunately at least 75% of the tongue-floor of the mouth lesions are anterior lateral. If these lesions are 2 cm. or less in size and have not metastasized, there is a 75% 5-year survival rate. Unfortunately, despite these lesions being readily visible, over 50% of them have metastasized before diagnosis and if the primary is 2 cm. to 3 cm. in size, 64% of them have metastasized before the establishment of their diagnosis. The cure rate rapidly plunges from 75% to 20% in these situations. There seems to be a significant difference between lesions that are exophytic or those deeply infiltrated and the radiation or surgical response is much different in these situations. It is our feeling that all of the teeth must be removed before radiation of oral and nasopharyngeal lesions otherwise, terrific deterioration of the teeth and radionecrosis and osteomyelitis of the mandible may be a horrendous complication. There is a considerable morbidity rate following radiation therapy for floor of the mouth and tongue lesions and a dry mouth ensues and sometimes persists for many years. Wide surgical excision with neck dissection when indicated has been my choice of therapy and there are large numbers of persons functioning quite well following rather radical tongue surgery.

Parotid carcinoma occasionally appears no different than benign mixed cell tumor though 30% of the patients have some facial nerve involvement and of course, a consequent poor prognosis on first examination. There is only a 25% 5-year survival rate with 2/3 of these cases recurring in the operative field. This makes one feel that a more aggressive expansion of the operative field should be encouraged and furthermore, frozen section report should be obtained on all seemingly benign parotid tumors lest one compromise the situation by doing a limited operation on a lesion that later is diagnosed in retrospect as malignant.

Cancer of the larynx lesions occurring at or extending to the region below the vocal cords, that is subglottic, or just above the larynx, that is in the hypopharynx, have a grave prognosis no matter how aggressive and how many forms of therapy one may choose. Yet, lesions confined to one anatomic region such as a vocal cord or one surface of the epiglottis, that is T-1 lesions, have an 82% 5-year cure rate with radiation therapy and more extensive T-2 lesions have a 77% 5-year cure rate with radiation therapy alone. T-3 and T-4 lesions would automatically be considered for surgery following radiation. Of the failures in the T-1 and T-2 group with radiation, 75% can be

cured later by surgical intervention if the recurrence is picked up in adequate time. Much more extensive lesions of the larynx and hypopharynx have had a significant improvement in the 5-year survival rate by combining modalities of chemotherapy with radiation therapy and then partial or total laryngectomy as the case may dictate. Stage I lesions operated have a 90% 5-year cure rate and Stage II lesions have a 70% cure rate. Stage III lesions a 40% cure rate and in laryngeal carcinoma extensively involving all of the larynx but breaking through into the neck, a Stage IV lesion, there still is about a 20% 5-year survival rate if aggressive measures are taken. It is fortunate that the discrete lesions on the cord, while metastasizing very late give a husky voice very early. In contrast, pyriform sinus laryngeal lesions give little to no husky quality to the voice, ultimately may give some dysphagia when they become very extensive, and usually are present in metastatic nodes before the first diagnosis is made. These extrinsic laryngeal lesions, that is tumors originating away from the interior of the larynx, have such a notorious high metastatic rate that a prophylactic radical neck dissection is usually performed even in the absence of palpable nodes.

Radical neck dissection is a procedure which can be carried out with a surprisingly good cure rate if nodes should show up after primary cancer has been successfully resected. Incontinuity surgery, that is removal of the primary and nodes, is of course more desirable but there are many people living today who, after control of their primary lesion, were carefully followed and recurrent metastatic nodes were picked up early, with radical neck dissection bringing on a delayed salvage.

Unfortunately at our present state of knowledge in the field of cancer biology, early diagnosis, aggressive wide field surgery and in advanced cases, combinations of perfusion and oral chemotherapy followed by radiation therapy — sometimes in combination with later surgery, are the best we have to offer. In the head and neck region, an aggressive approach is very frequently rewarded by cures. On the other hand, late diagnosis and limited surgery may lead to terrific morbidity and ultimate mortality.

131 Chadwick Street, Portland, Maine 04102.

## A Venture in Education

by MELVIN BACON, M.D., Sanford, Maine

I have been interested in the welfare of children and have examined thousands of school children, including athletes, over the years. It occurred to me that an educational program on "Athletics in Youth" for parents, friends, schoolteachers, coaches, nurses and the laity would be of value and interest. Consequently, I decided to set up such a program.

Daniel F. Hanley, M.D., Executive Director of the Maine Medical Association and head physician for the Olympic Games in Munich (July 1972), and Harry B. Eisberg, M.D., President of the York County Medical Society, gave their approval for this project.

This program is to be sponsored by the Sanford-Springvale Community Health Association and is to be held Wednesday, September 15, 1971 from 7:00 p.m. to 9:30 p.m. at Nasson College, Springvale, Maine.

The program is as follows:

Registration — 6:30 p.m. to 7:00 p.m.

Welcome — 7:00 p.m. — Mrs. Peggy Roy, R.N., President, Sanford-Springvale Community Health Association

Presiding — Melvin Bacon, M.D., Program Director and Chairman of the Medical Advisory Board of the Sanford-Springvale Community Health Association

Speakers and their Subjects:

John B. Anderson, M.D., Brunswick, Maine — Physician, Bowdoin College and Olympic Team Physician

Subject — "Athletics in the Olympics and Athletic Injuries"

Conner M. Moore, M.D., Saco, Maine, Assistant

Chief of Pediatrics, Webber Hospital, Biddeford, Maine

Subject — "When Does a Child Become an Athlete"

Robert Blouin, Sanford, Maine, Director of Athletics, Sanford School System, Sanford, Maine

Subject — "Evolution of Athletics in Youth, from Midget Leagues Through High School"

Wayne Wormwood, North Berwick, Maine, Director of Camp Waban, Sanford for Mentally Retarded Children

Subject — "Athletics and the Mentally Retarded"

Film on Physical Fitness.

Questions and Answers.

Refreshments.

It appears of interest to let you know just to what extent Maine is involved in the Olympic Movement. Dr. John Anderson of Brunswick will be the head physician for the Pan American Games in Cali, Colombia this summer and Dr. Lawrence Crane of Portland will be head physician for the Winter Games in Sapporo, Japan (February 1972). Dr. Daniel Hanley, Executive Director of the Maine Medical Association, Brunswick, Maine will be at the Games in Munich (July 1972). In addition, two athletic trainers: Wes Jordan from the University of Maine will go to Cali, Colombia this summer and Carl Nelson, trainer at Colby College will go to the Winter Games in Sapporo, Japan. Also, Frank Sabasteanski, Bowdoin track coach, will be hosting a contingent of olympic athletes who will take part in a program covering many of the field events, utilizing Bowdoin's new all weather

*Continued on Page 230*



# Interpretation of Abnormal Values of the SMA 12/60 Lab Tests at the Maine Medical Center

## A Preliminary Study

ROBERT E. CAVEN, M.D.\*

With the introduction of practical and economic batteries of laboratory tests, i.e., the automated SMA 12/60 in June of 1966 at the Maine Medical Center, the clinicians' diagnostic tools have been extended. In many instances, however, the significance of some SMA 12/60 values has not been immediately apparent. This pilot study is designed to answer, therefore, the following specific questions: 1. What percentage of abnormal values were immediately appreciated as indicative of a) known disease process, b) an unexpected or new disease process, c) an artifact produced by non-disease related factors and/or laboratory variation, or d) insignificant (not indicative of any disease process).

An ideal survey would involve an analysis of one thousand patients' SMA 12/60 abnormal values randomly selected during a six month period. One such ideal study was undertaken by Robert Belliveau et al at Salem Hospital, Salem, Massachusetts.<sup>1</sup> A follow-up survey on patients with abnormal values not immediately interpreted as significant should be undertaken by contacting outpatient records and/or private physicians. Limitation of time and personnel, however, prevents such a complete undertaking at this time. The following study, therefore, may not be without the following biases: 1) Physicians may have made a judgement about an abnormal lab value and not recorded it on the chart; 2) the smaller population (100 patients) may not be a large enough sample.

### METHOD OF STUDY

The charts of 100 patients with significantly abnormal SMA 12/60 values determined during July 1968 were reviewed. Significant "abnormals" were plus and minus two standard deviations from the mean. The clinician interpretation of each significantly abnormal value was then analysed. The interpretation fell into one of the four questioning categories listed above and a fifth category: that of, "interpretation not stated or is unknown or there is no information direct or indirect that the physician was even aware of an abnormal value."

### RESULTS

From a total patient population of 120, 70 were selected for survey. There were 37 males and 33 females ranging in ages from 3 months to 88 years. The population consisted of inpatients and outpatients, "service and private."

\*Resident in Medicine, Maine Medical Center, Portland, Maine 04102.

TABLE 1

RANGES OF VALUES USED IN SCREENING PROFILE	
<i>Determinations</i>	$\pm 2$ S.D.
Calcium (mg%)	8.5 - 10.5
Inorganic Phosphorus (mg%)	2.5 - 4.5
Glucose (mg%)	65 - 110
BUN (mg%)	10 - 20
Uric Acid (mg%)	2.5 - 8
Cholesterol (mg%)	150 - 300
Total Protein (Gm%)	6 - 8
Albumin (Gm%)	3.5 - 5.0
Total Bilirubin (mg%)	0.15 - 1.0
Alkaline Phosphatase (mU/ml)	30 - 85
Lactic Dehydrogenase (mU/ml)	90 - 200
Glutamic Oxalacetic Transaminase (mU/ml)	10 - 50

A list of the normal ranges is described in Table 1.

A compilation of the breakdown of the abnormal values is found on Table 2. In this group, the most frequent abnormal laboratory value was the serum glutamic oxalacetic transaminase. The least frequently abnormal value was cholesterol with only eight of a total of 308 abnormalities. Except for calcium, total protein, and albumin, most of the results were elevated results (as should be expected). The low values found for phosphorus, BUN, uric acid, and cholesterol may well be insignificant; however, because of no stated interpretation of such, these abnormally low values were placed under category #5. Three patients whose age placed them in the pediatric population had abnormally elevated calcium alkaline phosphatases, LDH, and SGOT values. These patients were placed in category #4.

It is re-emphasized that even though the physician did not state the significant correlation of the abnormal lab value with a disease process, if the abnormal laboratory value was consistent with disease process or processes, then the abnormal value was categorized under category #1 (consistent with known disease). In contrast, however, abnormal lab values which could not be even indirectly attributed to any disease process, laboratory, or artifactual error, were placed under category #5 (significant unknown and/or not stated or explained).

### CONCLUSIONS AND DISCUSSION

Fifty percent of the abnormal SMA values were directly or indirectly attributable to known disease processes. No abnormal laboratory values could be attributed directly or indirectly to artifact or error. Significant is that about forty percent of the abnormal lab values were either com-



TABLE 2

TESTS	C. A.	P.	B.S.	Bun.	Uric Acid	Chol.	T. P.	Alb.	Bil.	Alk. p'tase	LDH	SGOT	Total
Abnormals	24	20	35	26	19	8	13	31	19	31	36	46	308
> 2 s.d. from mean	8	14	35	21	16	6	6	4	19	31	36	46	242
< 2 s.d. from mean	16	6		5	3	2	7	27					65
1 Consistent with Known Disease	10	8	15	12	9	1	5	13	12	20	20	22	147
2. Unexpected or New Disease	1								2		2	2	7
3. Result of Artifact or Error													
4 Abnormal, Insignificant i.e. age	2	5	1	2	1	1	1	3	1	3	1	3	24
5. Signif. Unknown or not Stated or Explained	11	7	19	12	9	6	7	15	4	8	13	19	130

pletely ignored or the physician failed to state his position concerning the laboratory value on the medical record.

As stated in the beginning of this article, it is most difficult and well nigh impossible to state that forty percent of the abnormal values went completely unnoticed. This is particularly true inasmuch as this study did not consist of follow-up interviews with the physicians involved. However, one cannot escape the fact that the physician's interpretation of this large number of abnormal values was not properly recorded on the medical record.

In conclusion then, one can either assume a) that the SMA 12/60 even when it reveals an abnormality is only

50% effective or b) the physician is not keeping an adequate medical record as a proper scientific document. It is suggested that one useful tool in the promotion of better recording of abnormal lab values could be the Problem-Oriented Medical Record System devised by Weed.<sup>2</sup>

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# Complete Dentistry for Handicapped Children Under General Anesthesia

CLARENCE E. MCINTIRE, B.S., D.M.D., F.A.C.D.\*

No longer is the patient with a handicap thought of as an individual who is to be shunted from one office to another seeking some sort of dental help. Rather, he is thought of as a human being who needs dentistry badly and one for whom total care is now available.

According to the U. S. Department of Health, Education and Welfare, the number of handicapped persons in the United States is on the increase. This is due partially to the decrease in fetal and natal deaths and because more cases are cared for at home due to improved economic conditions which tend to increase the longevity of the handicapped.

Because he was unable to cooperate sufficiently to permit cavity preparation, caries in the cerebral palsy child of average intelligence was ignored 15-20 years ago. Multiple extractions resulted. By the time he was 18 years old, even if he were trained to function despite his motor impairment, he was additionally handicapped by the absence of teeth since prosthetic appliances are usually out of the question. The participation of the handicapped in productive life has placed new demands on the dental profession, hospitals and social agencies.

Hemophilia, cerebral palsy, mental retardation, epilepsy, some types of cardiac cases, emotionally disturbed, and even the very young with extensive caries are included among the handicapped for purposes of dentistry.

Today's dentist need not refuse to treat these patients because of their uncontrolled movements or disruption of office routine. These patients can be treated very satisfactorily in the hospital under general anesthesia. Experience at Baltimore Childrens Hospital where a pilot project was conducted in 1961 confirms the estimate that 50% of the cerebral palsy cases and 80% of mental retardation cases would require general anesthesia with intubation for dental care.

Since most dental procedures are elective in nature, these patients should be in optimal condition before they are scheduled for surgery. This type of patient is more prone to develop respiratory disturbances. The nature and severity of their physical handicap depend on the site of brain damage, but excessive salivation and difficulty in swallowing are features common to many cerebral palsy patients. Aspiration of saliva or food particles often causes chronic pulmonary infection. Some have never developed their deglutition to the point of being able to handle solid foods resulting in a chronic nutritional deficiency. These conditions must all be corrected or treated before induction of general anesthesia.

With all this in mind, my intent is not to discuss dental procedures per se, but rather how such a hospital service was established at the Maine Medical Center. Our first step was to visit the Baltimore Childrens Hospital. This had been exclusively for polio patients. However, with the advent of the Salk vaccine their patient load was drastically reduced. A pilot project was set up supported by the State Department of Health and grants from the United Cerebral Palsy, and directed by Dr. Burton R. Pollack. We spent a day with Dr. Pollack, observing their procedures and physical set up.

When we returned to Portland, we set a budget of approximately \$3500.00 for the necessary equipment and supplies. This money was raised by contributions of about \$1300.00 from the Trustees of the Maine Medical Center, about \$1700.00 from the Portland Kiwanis Club, and the balance from interested individuals.

All equipment has to be mobile so that any operating room can be used. Our major pieces of equipment are:

1. A mobile General Electric X-ray which was supplied by the State Department of Health and Welfare.
2. An Emesco Explosion Proof Engine — a slow speed drill.
3. A mobile American Cabinet.
4. A Midwest Airtor with 2 handpieces — a high speed drill.
5. A mobile Airtor base with casters.

This last piece of equipment is really the making of the entire set up. It contains an air compressor, a water tank, air and water syringes, and electrical outlets for an x-ray view box and any other necessary equipment. The compressor runs the Airtor, provides air for the air syringe and supplies compression to operate the water syringe, and is completely mobile.

Of course, there are many hand instruments and supplies. These are all stored in the mobile cabinet. The surgical instruments are stored in a separate surgical pack all autoclaved and ready for use. Our aspiration comes from the central aspiration available in each operating room.

The next important step was coordinating with the Department of Anesthesiology. We at the Maine Medical Center are extremely fortunate in that there is an excellent rapport between the physicians and the dentists. As is the case in every hospital, the operating room suite is overburdened and it is difficult to get bookings for elective procedures. We are authorized one Wednesday and one Friday morning each month. This is for service cases and depending upon the length, one or two patients are cared for. Private cases can be and are done. However,

\* Assistant Chief Dental Service, Maine Medical Center, Portland, Maine 04102.

these bookings have to be made whenever operating room time is available.

A description of this service was drawn up and presented to the Trustees and Executive Committee of the hospital. This included the purpose, the method, the staff, the ethics, the scope of treatment, operating procedures, and future of the service.

Each patient must be referred by a dentist, physician, or agency. Whenever possible, some sort of dental pre-examination and evaluation is made. If this is impossible, and if we feel this pre-evaluation is absolutely necessary, the patient can be brought in on an out-patient basis and a very short 5 to 10 minute examination done under general anesthesia before we start our regular cases for that day.

All patients are admitted the afternoon before the operation. A complete history is taken and a physical examination including urinalysis and CBC is done by the pediatric house staff, or occasionally by the patient's own physician, when specifically requested. A parent is asked to stay with the patient, particularly when there is a behavior problem. We feel they know the child's idiosyncrasies and can care for them best. This also relieves the floor nurses in such cases.

The anesthesia department then takes over and orders the premedication which best suits the case. The next morning the patient is taken to the OR. The induction is usually done with either sodium Pentothal® or nitrous oxide. The anesthetic agent used during the operation is fluothane. This is particularly good since it is explosion proof. Since the operative work takes place in the airway and is usually quite extensive, the use of the endotracheal tube is mandatory. At the discretion of the anesthesiologist, intubation is accomplished either orally or nasally. Of course, we are always happier when the tube is intro-

duced nasally. However, when there is any chance of disturbance to adenoid tissue, the mouth is used. As the dentist operates on one side of the mouth, the tube is placed on the opposite side and the throat well packed. When that side is completed, the pack is removed, the tube placed on the other side, the throat repacked and the work completed on this side. Pulse rate and blood pressure are monitored continually and intravenous solution is always administered.

The actual dentistry is nothing more than that which each of us is doing every day, with one exception — it is a great deal easier. We work in teams of two and during the operative phase use a semi-sterile technic, that is — with well scrubbed bare hands. We first x-ray the teeth, next clean the teeth, and then do all the fillings. We try to anticipate future decay and extend into all the grooves and fissures. One thing we do not do is pulp capping or pulpotomies. If we can penetrate the pulp with an explorer, we remove this tooth. This is done to eliminate any possibility of having to reanesthetize this patient due to a postoperative toothache. After all the operative work is done, the mouth is cleaned of all debris. The dentists retire to the scrub room and the necessary extractions are done using sterile technic with rubber gloves and draped patient.

The necessary postoperative orders are given and the patient taken to the recovery room. The patient is visited that night to check on his progress and if there are no complications, discharged the following morning.

This is a very satisfying experience knowing that you have helped such individuals. Our procedures last from about 30 minutes to as long as 5½ hours.

666 Brighton Avenue, Portland, Maine 04102.

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### 2nd Annual Meeting of the American Medical Society on Alcoholism

The 2nd Annual Meeting of the American Medical Society on Alcoholism on the subject "Multi-disciplinary Treatment of Alcoholism — The Changing Role of the Physician and The Allied Health Professionals" will be held on October 29-30, 1971 in the Thomas B. Turner Auditorium of The Johns Hopkins University School of Medicine, Baltimore, Maryland.

The meeting will take place in conjunction with The Department of Continuing Medical Education of the University of Maryland School of Medicine and under the sponsorship of The Medical and Chirurgical Faculty of Maryland; The Division of Alcoholism Control, Maryland Department of Mental Hygiene; the Baltimore City Department of Health Alcoholism Center; The Baltimore Area Council on Alcoholism and The Johns Hopkins University School of Medicine.

In addition to innovative papers by outstanding authorities in the field, workshops will consider such problems as children of alcoholics, the family, medical complications, the woman alcoholic, planning alcoholism programs, traffic safety, industrial programs, the general hospital, other drug abuse and the role of non-professionals.

Further information may be secured by writing to Maxwell N. Weisman, M.D., Director, Division of Alcoholism Control, State Office Building, 301 W. Preston Street, Baltimore, Maryland 21201.



# Maine Medical Association

## STANDING COMMITTEES — 1971-1972

Standing Committees for 1971-1972 as proposed by the Nominating Committee and approved at the Second Meeting of the House of Delegates of the Maine Medical Association at Kennebunkport, Maine, June 13, 1971.

### Council on Health Manpower and Education

#### Committee on Allied Health Professions\*

- William L. MacVane, Jr., M.D., 211 State St., Portland 04101 (3 yrs.) — Chairman  
 George W. Hallett, M.D., 22 Bramhall St., Portland 04102 (3 yrs.)  
 George W. Bostwick, M.D., P.O. Box 388, Newcastle 04553 (2 yrs.)  
 Donald M. Robertson, M.D., Box 188, Milbridge 04658 (2 yrs.)  
 Francis J. O'Connor, M.D., 4 Woodlawn St., Augusta 04330 (1 yr.)

#### Committee on Continuing Education\*

- Richard T. Chamberlin, M.D., Thayer Hospital, Waterville 04901 (3 yrs.) — Chairman  
 Robert H. Pawle, M.D., 251 U. S. Rt. 1, Falmouth 04105 (3 yrs.)  
 Bradley E. Brownlow, M.D., Blue Hill Mem. Hospital, Blue Hill 04614 (2 yrs.)  
 Stanley E. Herrick, Jr., M.D., Central Me. Gen. Hospital, Lewiston 04240 (2 yrs.)

Karl E. Sanzenbacher, M.D., 325C Kennedy Mem. Dr., Waterville 04901 (1 yr.)

#### Committee on Recruitment, Aid and Placement

- Robert E. McAfee, M.D., 7 Bramhall St., Portland 04102 (1 yr.) — Chairman  
 George J. Robertson, M.D., 1370 Turnpike St., No. Andover, Mass. 01845 (1 yr.)  
 Ferris S. Ray, M.D., 7 Bramhall St., Portland 04102 (2 yrs.)  
 Charles H. Lightbody, M.D., No. Main St., Guilford 04443 (2 yrs.)  
 Paul A. Brinkman, M.D., Farmington 04938 (3 yrs.)

#### Committee on Scientific Programs

- Bradley E. Brownlow, M.D., Blue Hill Mem. Hospital, Blue Hill 04614 (1 yr.) — Chairman  
 Robert H. Pawle, M.D., 251 U. S. Rt. 1, Falmouth 04105 (2 yrs.)  
 William H. Austin, M.D., 125 Chadwick St., Portland 04102 (3 yrs.)

### Council on Medical Services

#### Committee on Care of the Disadvantaged

- David C. Dixon, M.D., Box 792, Farmington 04938 (2 yrs.) — Chairman  
 Harland G. Turner, M.D., Box 38, Norridgewock 04957 (2 yrs.)  
 Gred J. Hoch, M.D., Phillips 04966 (1 yr.)  
 Harry L. Harper, M.D., 17 Main St., So. Paris 04281 (1 yr.)  
 Eliot T. Stadler, M.D., West Gouldsboro 04687 (3 yrs.)  
 Melvin Bacon, M.D., 118 Main St., Sanford 04073 (3 yrs.)

#### Committee on Emergency Medical Service\*

- Darrell P. Thorpe, M.D., Maine Medical Ctr., Portland 04102 (3 yrs.) — Chairman  
 Edward K. Morse, M.D., 22 White St., Rockland 04841 (3 yrs.)  
 Winford C. Adams, M.D., 14 Starlight Dr., Brewer 04412 (2 yrs.)  
 William Spear, M.D., 107 Main St., Lisbon Falls 04252 (2 yrs.)  
 John W. Towne, M.D., 325C Kennedy Mem. Dr., Waterville 04901 (1 yr.)

#### Committee on Government Health Activities\*

- Thomas F. Shields, M.D., 300 Pine St., Lewiston 04240 (3 yrs.) — Chairman  
 John R. Davy, M.D., 61 Thomas St., Portland 04101 (3 yrs.)

Kevin Hill, M.D., 325A Kennedy Mem. Dr., Waterville 04901 (2 yrs.)

Robert P. Andrews, M.D., 489 State St., Bangor 04401 (2 yrs.)  
 Morris A. Lambdin, M.D., Maine Coast Mem. Hospital, Ellsworth 04605 (1 yr.)

#### Committee on Health Care Financing

- Francis A. Winchenbach, M.D., 910 Washington St., Bath 04530 (2 yrs.) — (Lincoln-Sagadahoc) — Chairman  
 Charles W. Steele, M.D., 472 Main St., Lewiston 04240 (1 yr.) — (Androscoggin)  
 Arthur K. Carton, M.D., 7 Park St., Houlton 04730 (1 yr.) — (Aroostook)  
 Ferris S. Ray, M.D., 7 Bramhall St., Portland 04102 (2 yrs.) — (Cumberland)  
 Gaetano T. Fiorica, M.D., 12 Church St., Chisholm 04222 (3 yrs.) — (Franklin)  
 Llewellyn W. Cooper, M.D., Hancock St., Bar Harbor 04609 (1 yr.) — (Hancock)  
 Kenneth W. Sewall, M.D., 2 School St., Waterville 04901 (1 yr.) — (Kennebec)  
 Oram R. Lawry, Jr., M.D., 96 Limerock St., Rockland 04841 (1 yr.) — (Knox)  
 Adwaita K. Ganguli, M.D., 191 Lincoln Ave., Rumford 04276 (3 yrs.) — (Oxford)  
 Thornton W. Merriam, Jr., M.D., 431 State St., Bangor 04401 (3 yrs.) — (Penobscot)

\*New Committees appointed by the President, Linus J. Stitham, M.D., with the consent of the Executive Committee.

Charles H. Lightbody, M.D., No. Main St., Guilford 04443 (2 yrs.) – (Piscataquis)  
 Harland G. Turner, M.D., Box 38, Norridgewock 04957 (3 yrs.) – (Somerset)  
 George L. Temple, M.D., Fahey St., Belfast 04915 (2 yrs.) – (Waldo)  
 John Kazutow, M.D., Box 113, Columbia Falls 04623 (3 yrs.) – (Washington)  
 Andre P. Fortier, M.D., 68 Foss St., Biddeford 04005 (2 yrs.) – (York)

### **Members of the Advisory Committee to the Committee on Health Care Financing**

Maine Society of Anesthesiology – Clement S. Dwyer, M.D., 83 Essex St., Bangor 04401  
 Maine Chapter, American Academy of General Practice – John D. Denison, M.D., 89 Hospital St., Augusta 04330  
 Maine Society of Obstetrics and Gynecology – E. Allan McLean, M.D., 29 Deering St., Portland 04101  
 Maine Chapter, American Academy of Pediatrics – Everett A. Orbeton, M.D., 131 Chadwick St., Portland 04102  
 Maine Society of Internal Medicine (Includes Medical Specialty Group) – Albert Aranson, M.D., Maine Medical Center, Portland 04102  
 Section on Ophthalmology of the M.M.A. – Jay K. Osler, M.D., 74 Birch St., Bangor 04401  
 Maine Radiological Society – John F. Gibbons, M.D., 22 Bramhall St., Portland 04102  
 Maine Chapter, American College of Surgeons – John F. Reynolds, M.D., 325 Kennedy Dr., Waterville 04901  
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Veterans Affairs Committee – Harry B. Eisberg, M.D., 357 Elm St., Biddeford 04005  
 Maine Psychiatric Association – Reuben Leitman, M.D., 188 Sabattus St., Lewiston 04240  
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 Charles F. Branch, M.D., 69 Gamage Ave., Auburn 04210 (1 yr.)  
 Albert Aranson, M.D., Maine Medical Center, Portland 04102 (1 yr.)  
 H. Douglas Collins, M.D., Caribou Clinic, Caribou 04736 (1 yr.)  
 Hans A. Holzwarth, M.D., 336 Mt. Hope Ave., Bangor 04401 (2 yrs.)  
 Bradley E. Brownlow, M.D., Blue Hill Mem. Hospital, Blue Hill 04614 (2 yrs.)  
 Robert F. Ficker, M.D., Maine St., Kennebunkport 04046 (2 yrs.)  
 Paul J. Killoran, M.D., Knox County Gen. Hospital, Rockland 04841 (2 yrs.)  
 Gilbert Marcotte, M.D., State House, Augusta 04330 (2 yrs.) – (Nonmember of M.M.A.)

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### **Committee on Professional Liability**

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 John A. Root, M.D., 22 White St., Rockland 04841  
 George L. Maltby, M.D., 31 Bramhall St., Portland 04102  
 Clement S. Dwyer, M.D., 83 Essex St., Bangor 04401  
 Allan J. Stinchfield, M.D., P. O. Box 343, Augusta 04330  
 James H. Bonney, M.D., 53 Chadwick St., Portland 04102

## **Delegate and Alternate Delegate to AMA**

(January 1, 1972 to January 1, 1974)

Delegate – George W. Wood, III, M.D., 156 No. Main St., Brewer 04412

Alternate Delegate – Richard P. Laney, M.D., 50 Water St., Skowhegan 04976





## Picture of low back pain

**Parafon Forte tablets help to relieve pain,  
restore mobility... stop pain-spasm feedback**

Here is why. PARAFON FORTE provides:

**a nonsalicylate analgesic** equal to aspirin for relief of pain,<sup>1,2</sup> yet unlikely to cause the gastric irritation<sup>2,3</sup> or increased bleeding time<sup>4</sup> associated with aspirin therapy.

**and a skeletal muscle relaxant** shown in extensive clinical studies to be useful in a variety of low back disorders<sup>5-7</sup>...but which is not an antihistamine or tranquilizer derivative and is unlikely to produce a tranquilizing or sedative effect.<sup>8</sup>

Prescribe PARAFON FORTE for effective spasmolysis and analgesia in acute sprains, strains and myalgias of the lower back, including acute exacerbations of chronic conditions. Your patients will appreciate the restored comfort and freedom of movement it usually provides.

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## treated with Parafon Forte® TABLETS

Paraflex® (chlorzoxazone)\* 250 mg.  
Tylenol® (acetaminophen) 300 mg.

**Contraindications:** Sensitivity to either component. **Warnings:** *Usage in Pregnancy*—Use in woman of child-bearing potential only when potential benefits outweigh possible risks. **Precautions:** Exercise caution in patients with known allergies or history of drug allergies. If a sensitivity reaction or signs or symptoms suggestive of liver dysfunction are observed, the drug should be stopped. **Adverse Reactions:** Occasionally, drowsiness, dizziness, lightheadedness, malaise, overstimulation or gastrointestinal disturbances may be noted; rarely, allergic-type skin rashes, petechiae, ecchymoses, angioneurotic edema or anaphylactic reactions. In rare instances, *Paraflex* (chlorzoxazone) may possibly have been associated with gastrointestinal bleeding. While *Paraflex* (chlorzoxazone) and chlorzoxazone-containing products have been suspected as being the cause of hepatic toxicity in approximately eighteen patients, it was not possible to state that the dysfunction was or was not drug induced. **Usual Adult Dosage:** Two tablets q.i.d. **Supplied:** Scored, light green tablets, imprinted "McNEIL"—bottles of 100.

**References:** 1. Batterman, R. C., and Grossman, A. J.: *Fed. Proc.* 14:316, 1955. 2. Goodman, L. S., and Gilman, A., ed.: *The Pharmacological Basis of Therapeutics*, ed. 4, New York, The Macmillan Company, 1970. 3. Vickers, F. N.: *Gastroint. Endosc.* 14:94, 1967. 4. Mielke, C. H., Jr., and Britten, A. F. M.: *New Engl. J. Med.* 282:1270, 1970 (Corresp.). 5. Kestler, O. C., and Gyurik, J.: *Industr. Med. Surg.* 21:372, 1962. 6. Forster, S., et al.: *Amer. J. Orthop.* 2:285, 1960. 7. Data on file, McNeil Laboratories, Inc. 8. Friend, D. G.: *Clin. Pharmacol. Ther.* 5:871, 1964.

U.S. PATENT NO. 2,895,877



# Maine Heart Association Notes

20 Winter Street, Augusta, Maine



## Peripheral Venous Diseases

JESS R. YOUNG, M.D.\*

### VARICOSE VEINS

#### *General Comments*

The disorder of varicose veins is one of the most common affecting man. This condition is probably the result of a congenital weakness of the venous walls and the valves. The incidence is higher in women than in men. Obesity, pregnancy, prolonged standing, and thrombosis of the deep veins are important contributing factors.

#### *Clinical Picture*

The most common symptoms are those of aching, fullness, or fatigue on standing which is relieved by recumbency or by the wearing of an elastic stocking. It is important in the diagnosis to exclude other conditions such as tension fibrositis, water-retention syndrome, osteoarthritis, or a disk that may be causing symptoms in a patient with varicose veins, for even severe varicosities may be relatively symptomless.

Superficial thrombophlebitis and external hemorrhage are possible complications of varicosities. When severe varicose veins have been present for years, chronic stasis changes may appear with pigmentation, fibrosis, dermatitis, and ulcerations.

#### *Treatment*

The aim of medical therapy is chiefly to relieve symptoms and to try to prevent the progression of varicose veins. All patients with varicosities should wear elastic stockings, exercise their legs, keep their weight at an ideal level, and, when possible, should sit with their leg elevated. They should avoid wearing tight clothing such as garters and panty girdles, and should avoid prolonged standing. It may be helpful to elevate the foot of the bed between 4 and 6 inches to decrease venous pressure while sleeping.

When varicosities are small and the patient wishes treatment for cosmetic reasons, injections of sclerosing solutions may be attempted. For more advanced varicosities, the patient either should wear elastic stockings or else should undergo surgical removal of the affected veins by ligation and stripping. Any varices not removed by these procedures subsequent-

ly may be injected with sclerosing solutions as an office procedure.

### SUPERFICIAL THROMBOPHLEBITIS

#### *General Comments*

Thrombophlebitis in one of the superficial veins may be caused by trauma, intravenous injections, or may be associated with certain systemic diseases such as blood dyscrasias. Recurrent superficial phlebitis may be the first manifestation of thromboangiitis obliterans or of an occult malignancy, or may occur for no apparent reason.

#### *Clinical Picture*

Superficial phlebitis usually presents as a red, warm, painful, tender nodular area directly under the skin along the course of a vein. Edema is not present. The clot is adherent and is rarely the source of emboli.

Erythema nodosum may be quite difficult to differentiate from superficial phlebitis, and a biopsy may be necessary. Cellulitis should present no problem in differential diagnosis, for the process is more diffuse and there is no palpable cord along the course of the vein. Lymphangitis likewise should present no problem in diagnosis, for again no thrombosed vein is palpable and lymphangitis is associated with chills and a high fever.

#### *Treatment*

Most patients with superficial phlebitis need nothing more than rest and elevation of the extremity and application of warm, moist packs for a few days. When the pain and inflammatory reaction are severe, phenylbutazone or oxyphenbutazone may be given for three or four days. When the phlebitis continues to extend despite treatment, anticoagulation therapy should be initiated.

### DEEP THROMBOPHLEBITIS

#### *General Comments*

Deep thrombophlebitis is still one of the more common complications of major surgical operations, pregnancies, fractures or injuries of the lower extremity, or any serious illness that requires the patient to be confined to bed. The increased incidence with congestive heart failure, polycythemia, ulcerative colitis, and carcinomatosis is well known. In

\*Department of Peripheral Vascular Disease, The Cleveland Clinic Foundation, Cleveland, Ohio.

Prepared by the Maine Heart Association for this Journal.

many instances, deep thrombophlebitis occurs for no known reason.

### *Clinical Picture*

Early venous thrombosis may not be recognized clinically because of the absence of local or constitutional signs. The first indication of its presence may unfortunately be the occurrence of pulmonary embolism. However this asymptomatic bland type of venous thrombosis (phlebothrombosis) usually progresses to the more inflammatory state of thrombophlebitis which can be diagnosed clinically.

In the majority of patients the onset of deep phlebitis is gradual and mild, and the symptoms are often mistaken for rheumatism or muscle cramps. The discomfort is described as a dull ache in the calf or in the region of the thigh which is worse on standing, but relieved by recumbency.

The findings in deep phlebitis include edema, distended superficial veins, localized tenderness in the calf region or over the femoral vein, and the presence of Homans' sign with pain in the calf region on dorsiflexion of the foot with the knee in flexion. Usually, only minimal systemic reaction accompanies deep venous thrombosis. A low-grade fever, slight tachycardia, malaise, or a sense of apprehension may be present.

Various methods have been proposed to detect intravenous thrombi, including the use of radioisotopes, ultrasonic flow detection studies, and measurement of electrical impedance. Although these tests hold great promise, venography remains the most definitive method of study and should be done when the diagnosis is in doubt.

### *Treatment*

Because of the constant threat of pulmonary embolus, anticoagulant therapy with heparin should be started as soon as venous thrombosis has been diagnosed. Heparin is injected intravenously in doses of 5,000 units every 4 to 6 hours, or subcutaneously in doses of 10,000 to 15,000 units every 12 hours. If the diagnosis is in doubt, heparin should be given prophylactically, unless contraindicated, until venography is performed and the issue is settled.

Ligation or clipping of the inferior vena cava is performed in the patient in whom heparin is contraindicated, and in the patient in whom pulmonary embolus develops while he is on anticoagulant therapy.

The patient with deep phlebitis should be kept in bed with his extremity elevated and, if arterial pulses are present, treated with warm, moist packs. After from 5 to 7 days, the tenderness usually subsides and the patient may begin to ambulate. Then, the dosage of heparin is tapered and stopped. When significant edema persists, a well-fitted elastic stocking should be worn until such time that edema no longer appears when the stocking is not worn.

Venous thrombectomy may be considered in massive venous thrombosis, particularly in young, otherwise healthy patients.

Preventive measures against thrombophlebitis in-

clude early ambulation after operation, routine wearing of light elastic stockings by patients confined to bed, elevation of the foot of the bed, close attention to fluid balance to prevent dehydration, encouragement of active and passive muscle exercises, and avoidance of tight abdominal dressings.

## CHRONIC VENOUS INSUFFICIENCY

### *General Comments and Clinical Picture*

After deep phlebitis, the occluded vein usually becomes recanalized but the valves remain permanently damaged. If the patient does not properly care for his leg and wear a good elastic stocking to control edema, signs of chronic venous insufficiency may develop many months or years after the episode of thrombophlebitis. These changes include chronic edema, pigmentation, induration, and dermatitis. After slight trauma, ulcers develop which may be extremely difficult to heal.

### *Treatment*

If the patient is seen at a time when he has only edema and pigmentation, preventive measures should be advised to prevent the complications of dermatitis and ulcerations. He should sleep with the foot of his bed elevated on 4-to 6-inch blocks. He must wear a well-fitted elastic stocking when ambulatory. Exercise such as swimming, walking, or bicycling should be encouraged, and prolonged standing or sitting should be avoided. Women should not wear panty girdles or garters.

If a small clean ulceration is present, a modified Unna paste boot is applied to the leg and changed at from 7-to 14-day intervals depending on the progress of the patient. During this period, he can carry on normal activities as long as his occupation does not entail prolonged standing. Most ulcers will heal in from 4 to 12 weeks.

When the ulcer is badly infected with surrounding cellulitis, hospitalization may be necessary. The patient should be put to bed with the foot of the bed elevated, constant soaks applied to the extremity, and systemic antibiotics administered. When the ulcer is clean, the paste boot can be applied.

Very large ulcers will heal more rapidly and have a better chance of staying healed if a skin graft is used. It is important to do a wide excision and remove all the indurated area surrounding the ulcer.

Regardless of the method used in healing the ulcer, the patient must continue to wear elastic stockings and carry out the other prophylactic measures to avoid recurrence of the ulcer.

## SUMMARY

Varicose veins, venous thrombosis, and chronic venous insufficiency are common disorders affecting millions of people in this country. Numerous forms of therapy have been proposed. With newer methods of diagnosis of deep phlebitis and with improved evaluation of various types of treatment, perhaps some of the conflicting opinions regarding therapy can be resolved soon.





DEAN H. FISHER, M.D.  
COMMISSIONER

## State of Maine

# Department of Health and Welfare

## Rabies in Maine, 1971

CHARLES H. OKEY, PH.D.\*

The number of diagnosed animal rabies cases in the State this year reached a total of 153 by June 30 which was almost three times the largest number of cases recorded in any complete year of recent times. Also, cases were identified in all counties of the state.

A summary of animal cases since 1933 illustrates the variation from year to year and particularly reveals the effect of rabies having been introduced in the State from the west and north in 1962. Data from 1933 show 62 cases occurred in that year and 33 the following year. The 1933-34 outbreak involved a high percentage of dogs with dog-to-dog transmission demonstrated in many instances. However, the role of the fox in initiating and spreading the disease was recorded at the time. Few farm animals were involved. For the next ten years the cases were sporadic, occurring primarily in dogs. Dog cases varied from one to eight annually through 1944. The period from 1945 to 1962 was almost free of rabies except for foxes in 1948 and 1951 and a horse in 1959. This latter animal had lived its lifetime of eighteen years on a farm in Dexter and the means of exposure to the disease was not known. The two 1963 cases were a cat on a farm in Guilford and a fox in western Aroostook County. Exposure of the cat to a rabid animal was not established. One may only speculate about the sources of infection for the horse and the cat. An extremely low level of endemic rabies, probably in foxes, may have existed or a migratory bat carrying the virus may have been the source.

Thirty cases in 1964, largely in foxes, were clustered in Franklin and Oxford Counties except for bats found in Androscoggin, Kennebec and York Counties. A rabid bat found in Buckfield was the first to be demonstrated in the State, placing Maine as the forty-third State to identify rabies in this species.

Rabies appeared in eastern Aroostook County in 1966 simultaneous with its first occurrence in adjacent areas of New Brunswick in recent times. In succeeding years, it spread contiguously in a southerly direction until it reached central Maine in 1968.

The current outbreak was preceded by the finding of more rabid foxes during the last quarter of 1970 than

previously observed during this period in other years. It is reasonable to presume that the virus was well-seeded through the fox population which then spread the disease during the breeding season when the animals range more widely than at other times of the year. It is understandable how the spread of the disease to the more heavily populated areas of the State, with correspondingly large susceptible domestic animal populations, resulted in an outbreak of such proportions as has been experienced.

For the first time in Maine the number of domestic animals found to be rabid was greater than the number of wild animals, the actual count being 78 domestic and 75 wild. Rabid cats outnumbered dogs by a considerable margin of 20 to 8. This fact had an effect on owners who took their cats to veterinarians' offices and public clinics in larger numbers than ever before. Also, it leads one to speculate as to the desirability of cat licensure with a rabies immunization prerequisite.

The distribution of cases among species, wild and domestic, by month and as percentage of total animals examined, demonstrates certain interesting characteristics of the outbreak this year.

RABIES, MAINE, JANUARY 1-JUNE 30, 1971

	Jan.	Feb.	Mar.	April	May	June	Total
Fox	3	10	26	10	7	3	59
Coon	—	2	5	—	—	—	7
Skunk	—	—	4	1	—	—	5
Bat	—	—	—	—	1	1	2
Deer	—	—	—	1	1	—	2
Dog	1	2	3	1	1	—	8
Cat	—	2	16	1	1	—	20
Cattle	3	—	3	9	12	1	28
Sheep	—	—	—	3	7	4	14
Goat	—	—	—	1	1	1	3
Pig	—	—	1	—	2	—	3
Horse	—	—	—	1	1	—	2
Positive	7	16	58	29	32	11	153
Tested	21	29	136	232	203	133	754
% Positive	33	55	43	13	16	8	20

These figures represent trends and are not to be interpreted as accurate reflections of numbers of rabies cases nor a geographic distribution pattern of the disease among wild life. Limitations to the number of specimens

\*Director, Public Health Laboratory.



that can be processed by the laboratory has lead to the imposition of a policy which restricts examinations to animals that have exposed other animals or humans and to animals suspected of having rabies from areas not previously known to harbor the disease. Animals not meeting these criteria are not tested.

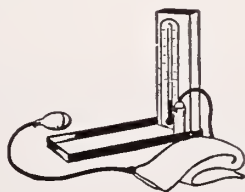
Examining the incidence figures on a monthly basis, it will be noted that the spread of rabies from fox to fox and from fox to other wild species and to dogs and cats appears to occur at about the same time. This observation leads to the conclusion that, in order for immunization of dogs and cats to be effective, the process must be completed well before the disease is apparent in foxes. An early warning of an incipient fox rabies outbreak, based on a surveillance system for estimating the amount and distribution of the disease throughout the State, would be valuable in planning for rabies immunization campaigns. Such a system would require greater laboratory support than is available now or possible in the immediate future. The appearance in farm animals occurs at a later period indicating an incubation period of greater length in these species.

A considerable proportion of the animals for which rabies examination is requested each year are rodents in which rabies is only a theoretical possibility. Species included in this group are rats, mice, rabbits, groundhogs, squirrels, chipmunks, moles and shrews. A search through the records in this country indicates that human rabies has never been traced to exposure by one of the rodent group. Much, if not all, of the reports of rabies in rodents to be found in the literature are based on earlier technics which were unreliable owing to a lack of specificity. The principal contemporary technic, the fluorescent rabies antibody test (FRA), has a high degree of specificity as well as sensitivity. Rodent examinations using the FRA test have rarely shown positive results and in none of these instances, where verification was possible by the Rabies Surveillance Unit of the Center for Disease Control, was street rabies virus demonstrated.

There are two apparent reasons for failure to find rabies in rodents. First, the animals in this group appear to be resistant to challenge with street virus requiring 600 to 1200 times as much virus to kill squirrels as that needed to produce lethal effects in the fox. Second, it is not likely small rodents would survive an attack by larger rabid animals and develop the disease.

Although the possibility of rabies in rodents cannot be dismissed at this point in time, the probabilities are of such a low order as to be less than the risk of using vaccine even though the presently recommended product is produced in duck embryo tissue and has an extremely low order of side effects. For the physician who must decide whether to administer vaccine to a patient in instances in which the biting animal has escaped or whether to ask for the laboratory examination of a biting rodent the suggestion is offered to determine if the bite was provoked or unprovoked. Provocation must be viewed from the animal's point of view. Was the animal picked up? Was the animal being fed? Was the animal protecting her young? Conversely, did the animal display unusual behavior and did it charge at the person? Or did the animal invade a sleeping bag and bite the victim? Each case must be evaluated in terms of the circumstances.

Finally, human rabies can be prevented if the common vectors of the disease from wildlife to man, dogs and cats, are immunized, if people refrain from handling wild animals no matter how much charm and appeal they may appear to have and if all animal bite wounds are encouraged to bleed and washed thoroughly with soap and water before seeking medical attention. Rabies deaths in this country have not exceeded three per year, and some years there has been only a single death, for many years. Maine recorded its last death in 1934. Placed against the perspective of highway deaths, which approach 60,000 annually, rabies appears to be insignificant, yet the apprehension and dread that it stimulates continues to be observed whenever circumstances are appropriate, and even when inappropriate.



A VENTURE IN EDUCATION - *Continued from Page 218*

track this summer. It takes almost 10 million dollars to train, equip, transport, house and feed our athletes to these three sets of games and this is done on funds raised on a voluntary basis. There is no government subsidy to the United States teams.

Transportation will be furnished by the York County Community Action Corporation from all parts of York County at no charge. All interested individuals may call 324-5762 for such service. Admission will be free to this meeting.

It appears that programs of such a nature would be of benefit to parental guidance and understanding.

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# The Journal of the Maine Medical Association

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Number 10

## Abnormal Bleeding in the Surgical Patient\*

LOUIS G. BOVE, M.D.\*\*

Uncontrollable generalized bleeding during surgery or during the immediate postoperative period is an alarming complication often associated with doubt by the surgeon as to the cause and proper treatment. There can be many reasons for generalized bleeding and often times multiple mechanisms of hemostasis are simultaneously involved; which further compounds the problems of proper diagnosis and therapy. Listed are six general problems which may serve as an outline. These problems will be elaborated in more detail later, but they will help organize one's thinking and make the proper laboratory evaluation more knowledgeable.

1. Preexisting Defects.
2. Effects of Anesthesia.
3. Disseminated Intravascular Coagulation (Consumptive Coagulopathy).
4. Fibrinolysis.
5. Bleeding Secondary to Transfusion Therapy.
6. Inadequate Surgical Hemostasis.

Normal hemostasis requires: (1) normal blood vessels, (2) a normal number of functioning blood platelets, and (3) a normal plasma coagulation system. Review of the normal coagulation mechanism is pertinent prior to further discussion. Fig. 1 is a guide which tries to retain those terms and reactions which have long been a part of our medical teaching, as well as bring us up to date with the current coagulation factors and their site of action in the normal formation of fibrin clot. Coagulation has become a sub-specialty in itself and, with it, a new terminology and vocabulary have followed. Generally, each coagulation factor has been assigned a roman numeral,<sup>1</sup> but some of the older terms are still used to aid our understanding.

I have retained the three-stage approach of old: I, the elaboration of thromboplastin; II, the conversion of prothrombin to thrombin; and III, the instantaneous change of fibrinogen to fibrin clot. It should be stressed, however, that this really is a continuous cascade of inactive to active substances<sup>2</sup> which, in themselves, especially in the case of thrombin, actively catalyze certain specific reactions to the completion of fibrin clot formation. The early stage can be accomplished by two different mechanisms: the intrinsic system which occurs within the blood vessel itself and in the test tube in the laboratory; and the extrinsic system which utilizes only tissue thromboplastin when there has been sufficient tissue injury to make it available, and Factor VII. In the intrinsic system are the three hemophilic factors (VIII, IX, XI) as well as the initiating or glass factor, XII, platelets and calcium. Both the extrinsic and intrinsic systems lead to the formation of Factor X, active, which probably is thromboplastin itself. I have listed under the stages the time necessary to complete the reaction, and it is obvious that Stage I is most time-consuming. Also listed are the proper screening tests of coagulation and the stage they are most sensitive to. These three, partial thromboplastin time (PTT), the prothrombin time (P-time), and the observation of the fibrin clot are all that is necessary; but, more elaborate and direct factor assays should be done to follow up any abnormality.

*Preexisting Defects* – Surgery places a stress on the normal hemostatic mechanism which may uncover a mild defect in a previously considered normal patient. Once bleeding has begun during surgery, insufficient time is available for adequate diagnosis and treatment, and the correction of the defect is compounded by the effects of the operation and its related stress. One can not emphasize enough that prevention is the important point here. Relying on the routine bleeding and clotting time to rule out the preexisting defect has long since been shown to be inadequate and unreliable. This can be further stressed by pointing out that as little as 1 percent of Factor VIII,

\*Presented in part to the American College of Surgeons – Tri-State Chapter, October 28, 1970, North Conway, New Hampshire.

\*\*Senior Attending Physician, Department of Internal Medicine, Maine Medical Center, Portland, Maine 04102.



Fig. 1

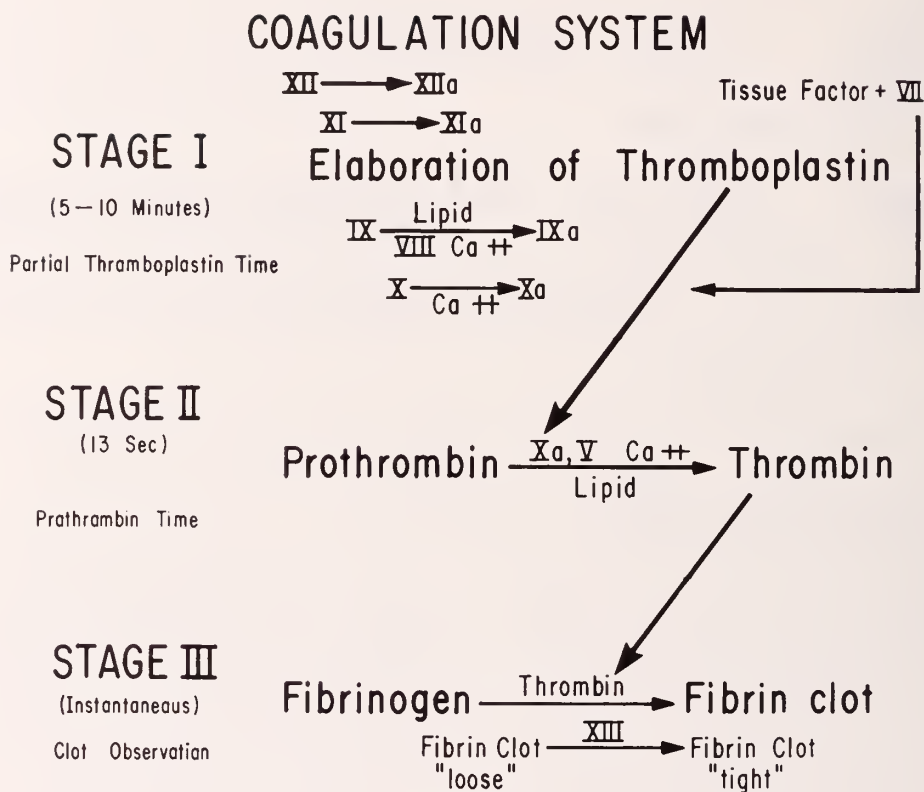


Fig. 2

## RECOMMENDED PREOPERATIVE SCREENING TESTS

1. History
2. Ivy Bleeding Time
3. Platelet Count
4. Partial Thromboplastin Time
5. Prothrombin Time
6. Observation of Clot

anti-hemophilic globulin, will give a normal clotting time, yet surgery on this same patient would be fatal if the proper replacement therapy is not used.

What is the proper preoperative bleeding work-up? (Fig. 2) A careful history is essential. Exposure to previous trauma or surgery is a much better test of hemostasis than any laboratory test as yet devised. Ask specifically regarding tonsillectomy and dental surgery. Remember, since most of the congenital bleeding problems are genetically transmitted, take a careful family history. The hemophilic syndromes are transmitted via sex-linked recessive trait, hence are present only in the male; the other congenital disorders are autosomal dominant and, hence, may be present in males or females.

These preoperative screening tests take into account that the normal hemostatic mechanism requires normal blood vessels, a normal number of functioning platelets, and a normal plasma coagulation syndrome. The bleeding time is that test to evaluate the vascular component, and the Ivy technique<sup>3</sup> of doing bleeding time is far superior

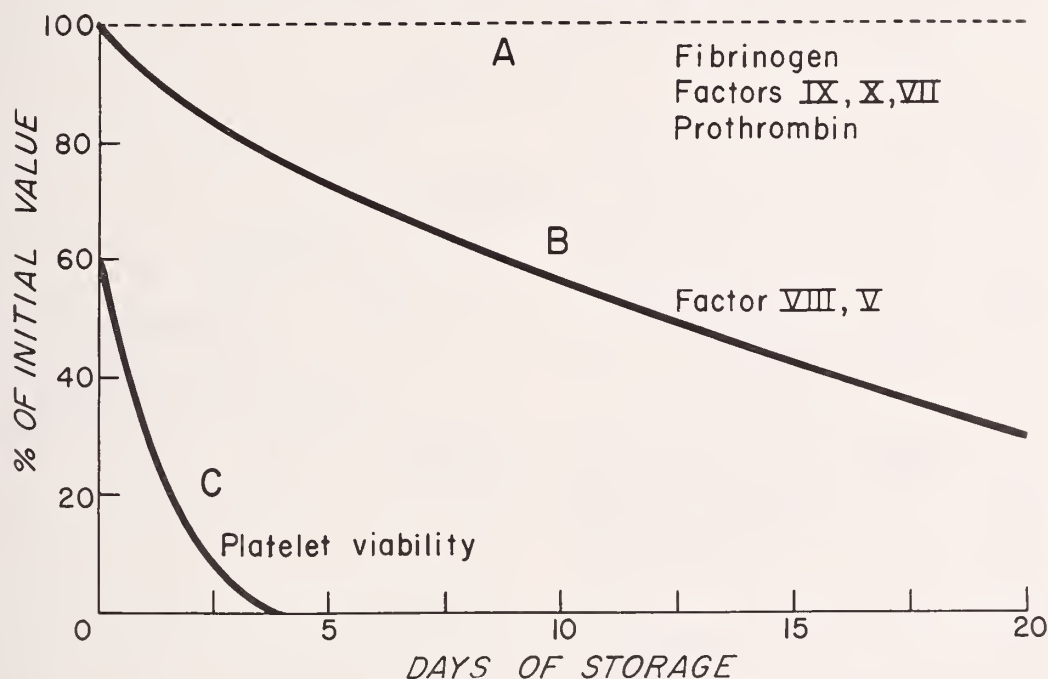
to the Duke method.<sup>3</sup> The platelet count speaks for itself, and most laboratory technicians are familiar with the technique of direct counts; but, if not, estimates can be made from looking at the peripheral smear alone. Remember, if the platelet count is reduced, the bleeding time is not necessary as it will be prolonged. The three tests of coagulation, the PTT, the P-time, and the observation of the fibrin clot, have been commented on previously.

A preexisting defect may be either congenital or acquired. The two most common congenital defects are the hemophilic syndromes (Hemophilia A and B) and Von Willibrund's disease. The former are transmitted as a sex-linked recessive gene so that the defect is present only in the male. The latter syndrome has only recently gained attention and is probably as common as hemophilia; it is transmitted as an autosomal dominant trait with a varying expression, so it is seen in both males and females. There are two defects in Von Willibrund's disease: a deficiency of Factor VIII (the defect in classical hemophilia) and a deficiency of plasma factor which results in a prolonged bleeding time and poor platelet adhesiveness. The commonest sources of trouble of an acquired nature are hepatic disease and thrombocytopenia. Whenever possible, preexisting defects should be corrected before elective surgery and emergency surgery.

*Effect of Anesthesia*—Anesthesia and drugs used concomitant with it causes alterations in vasomotor tone, CO<sub>2</sub> tension, and blood pH, all of which may increase the

Fig. 3

## Changes in Hemostatic Factors During Storage of Bank Blood



amount of bleeding from the surface of a wound on a vascular basis. There is little reason for believing that this has much effect on the amount of blood lost.

Other drugs should be mentioned here, even though they are not primarily used in anesthesia, for they may alter normal hemostasis and the laboratory tests done to evaluate this function. The most common drug involved is aspirin which can cause a prolongation of the bleeding time up to three to five days after the ingestion of two five-grain tablets.<sup>4</sup>

*Disseminated Intravascular Coagulation* – (Consumptive Coagulopathy) – Disseminated intravascular coagulation results in two phenomena which appear to be contradicting: thrombosis and hemorrhage. These consequences of intravascular coagulation are related to the rate at which the process occurs. Extensive and severe in-vivo clotting will lead to the deposition of fibrin thrombi in the microcirculation and even in large veins. These fibrin thrombi activate the fibrinolytic system and the thrombi are lysed into fibrin-split products (FSP). During this process, coagulation factors are being utilized at a faster rate than they can be replaced. The changes which occur are the same that occur when blood clots in a glass tube; platelets, fibrinogen, prothrombin, Factors V and VIII disappear. Not only is there a deficiency of those labile coagulation factors, but the FSP themselves interfere and compete with normal fibrinogen. Some of the FSP have an anticoagulant effect, which may well be the most significant part of this syndrome.<sup>5</sup>

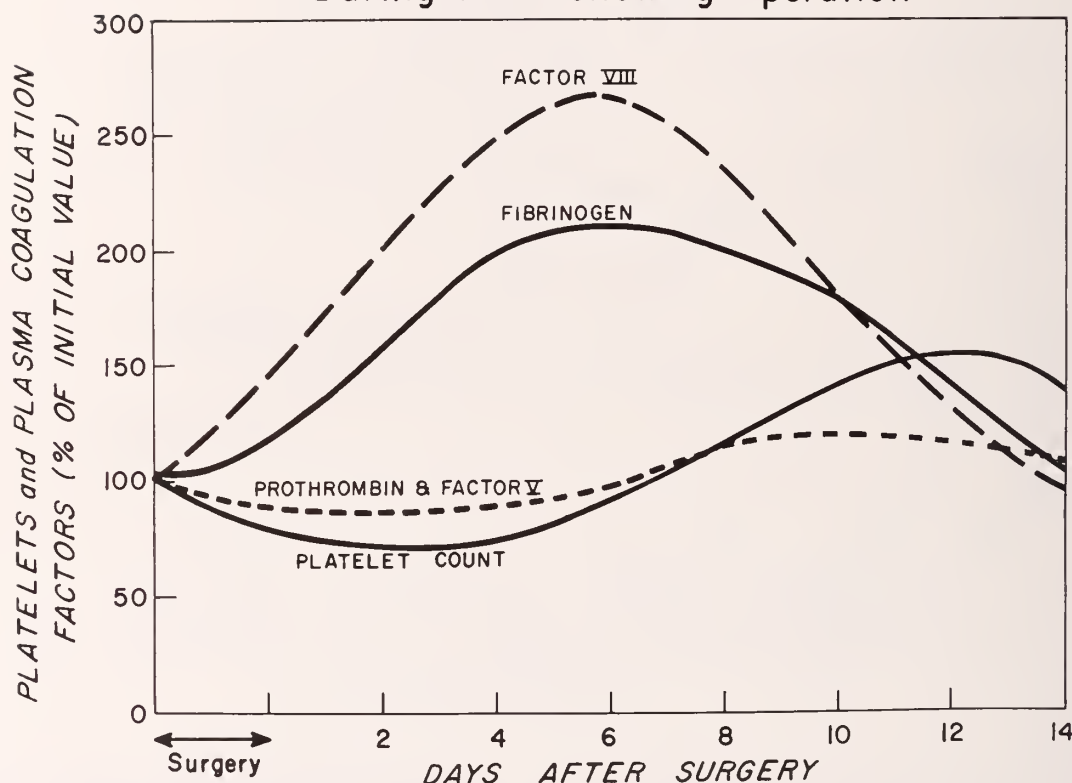
In general, it takes one or more of three distinct mechanisms to initiate intravascular coagulation:<sup>5</sup> (1) damage to the wall of the blood vessel, especially with associated introduction of thromboplastic tissue juices into the circulation, (2) activation of coagulation by exposure of blood to damaged vessel walls or by the liberation of partial thromboplastin from destroyed red blood cells and/or platelets, and (3) stagnation of circulation.

From the foregoing, it is apparent that prolonged periods of shock are likely to be associated with this syndrome. Trauma to tissues, especially with a high thromboplastin activity, such as lung or prostate, may initiate intravascular coagulation. The pancreas is another source of material (probably trypsin) which will do the same thing. The obstetricians have long recognized this syndrome in premature separation of the placenta, amniotic fluid infusion, and retained dead fetus. The mechanism here is the introduction of thromboplastic tissue juices into the general circulation. Gram negative septicemia is also often associated with this syndrome. Hardly a current journal comes out that this syndrome is not associated in with another disease. Dr. C. Philip Lape and myself recently reported a case of a patient with an abdominal aneurysm who had a bleeding tendency secondary to intravascular coagulation within this aneurysm.<sup>6</sup>

Intravascular coagulation should be thought of in any of the above situations. This syndrome will quickly result in a progressive lowering of both platelets and fibrinogen, along with a prolongation of P-time and PTT. A very

Fig. 4

## Change in Hemostatic Factors During and Following Operation



helpful clue can also be obtained from examination of the peripheral blood smear for shistocytes (fragmented and bizarre-shaped red cells).<sup>7</sup> Fibrinolysis screening tests and assay for FSP are also positive.

The first step in the control of abnormal bleeding due to intravascular coagulation is to interrupt the cause, if possible, restore a normal blood volume (using fresh blood); and the use of Heparin, if the syndrome is of a more chronic nature. It is somewhat stressful to use Heparin® in a patient with a generalized bleeding tendency, but this is often life-saving.<sup>8</sup> Intravascular coagulation occurring during surgery is often of brief duration and may require no special therapy.

**Fibrinolysis** – It is increasingly accepted that fibrinolysis is usually secondary to intravascular coagulation, and *not* a primary reaction.<sup>9</sup> Fibrinolysis may be induced, however, by severe emotional stress and other stimulation of adrenalin secretion. Tests have shown that some patients have some activation of fibrinolysis even before surgery begins.<sup>9</sup> Patients with cirrhosis are particularly prone to fibrinolysis because of low fibrinogen levels, the deficiency of natural inhibitors, or a reduced rate of clearance of the fibrinolysis activator. Other tissues (prostate, lungs, uterus) are also rich in the fibrinolysis activator, and the trauma to those organs may result in release of fibrinolysis into the general circulation.

Fibrinolysis is unlikely to be responsible for clinical bleeding by itself unless severe enough to lyse a whole blood clot in an hour or two. This is one reason for the recommended clot observation. On the other hand, lysis of this degree can certainly be seen in disseminated intravascular coagulation with secondary fibrinolysis. The distinction between the primary and secondary fibrinolysis is a most difficult one. One rapid test which may be helpful is a platelet count which should not be reduced in primary fibrinolysis.

Specific therapy is available for primary fibrinolysis in the form of an inhibition of the activator. The inhibitor is epsilon-amino-caproic acid (Amicar®).<sup>10</sup> One must emphasize that Amicar must not be used unless intravascular coagulation can be ruled out; since interruption of secondary fibrinolysis may result in massive thrombosis.<sup>11</sup> If you can not rule out intravascular coagulation, it would be safer to treat with Heparin.

**Bleeding Due to Transfusion Therapy** – The administration of large amounts of stored bank blood is one of the most frequent causes of abnormal bleeding at operation. The harmful effects of transfusion on hemostasis are related to the changes which occur in donor blood on storage (Fig. 3).<sup>12</sup> Primarily, this is related to loss of viability of blood platelets; the platelets viability is decreased after three hours and totally gone after 48 hours.



The activity of Factors V and VIII also decrease in bank blood during storage, but the decrease is slow, and these usually play little role in the bleeding which occurs after uncomplicated massive transfusion of stored blood. Fibrinogen is stable in bank blood and presents no problem. As a general rule, for every three units of bank blood, one unit of fresh blood should be given.

Massive transfusion of citrated blood of any age may lower the ionized calcium level to the point of cardiac arrest,<sup>13</sup> but not contributed to bleeding. This patient has long since died of tetany and/or cardiac arrest — rather than bleeding; hence low calcium is not a problem. Incompatible blood, of course, can result in intravascular coagulation — and bleeding secondary to it as mentioned. Another form of transfusion therapy which can contribute to abnormal hemostasis is the plasma substitute, Dextran®. In large amounts, Dextran coats the blood platelets, precipitable fibrinogen and Factor VIII.<sup>14</sup>

*Inadequate Surgical Hemostasis* — Time and again, continued postoperative bleeding at the surgical site will be found due not to a hemostatic defect, but to inadequate hemostasis. Remember, even in situations where hemostasis has been demonstrably abnormal, re-exploration may be necessary.

Fig. 4 diagrams the changes in some of the coagulation factors during and following surgery; it is important to be familiar with the normal in order to recognize the abnormal. For example, a fibrinogen value on the fourth postoperative day done for a question of disseminated intravascular coagulation is not normal at 300 milligrams percent. It should be two- to three-times this and, if one was not aware of the normal value at this time, one would misinterpret the results as normal, and delay the correct diagnosis.

#### SUMMARY

The causes of abnormal bleeding in the surgical patient are multiple. The most common situation is one

in which bleeding continues due to disseminated intravascular coagulation or an undiagnosed previous defect compounded by the administration of excessive amounts of stored blood: the most useful single therapeutic measure is replacement with fresh blood. When bleeding from the wound continues after the operation, but defective hemostasis does not appear to be an explanation, the wound should be re-explored.

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### Diabetes Detection and Education Drive

Diabetes Week, sponsored by the Maine Medical Association in cooperation with the American Diabetes Association, is to be observed from November 14th to 20th Statewide. We urge all physicians to participate in this annual Diabetes Detection and Education Drive in our State. Hospitals, newspapers, radio and television stations, industry and school systems and the Maine Pharmaceutical Association have agreed to participate in the Drive. This should not only be done during this week, but on a year-round basis as well. Diabetes is on the increase. Please help detect it.

Melvin Bacon, M.D., Chairman  
Diabetes Committee  
Maine Medical Association

# Fulguration as Primary Treatment of Cancer of the Rectum

DAVID L. PHILLIPS, M.D. and JAMES A. EDMOND, M.D.\*

Seventeen patients have been reviewed who have been treated by electrocautery as the primary method for carcinoma of the rectum between 1954 and 1971; 16 at the Maine Medical Center and 1 at Mercy Hospital. This discussion is a report of a retrospective analysis of data from this experience.

## MATERIAL

The average age was 70.6 and there were 9 males and 8 females. The youngest 57 and the eldest 89.

TABLE 1

### AGE AND SEX DISTRIBUTION

Age	Men	Women	Total
57-60	1	2	3
61-70	3	2	5
71-80	4	3	7
81-90	1	1	2
Total	9 (53%)	8 (47%)	17

The most common presenting symptom was bleeding, occurring in 6 or 35%, 3 others or 17.5% were found on routine physicals and another 3 or 17.5% presented with a change in bowel habits or stool character.

TABLE 2

Symptoms	No.	%
Bleeding	6	35
Routine P. E.	3	17.5
Tenesmus, change in habits	3	17.5
Weakness, anemia	2	11.6
MI, anemia	1	5.8
Abdominal distress, colitis	1	5.8
Breast cancer	1	5.8
Total	17	100

The lesions were fairly evenly distributed between anterior 5, posterior 6, and lateral 5 with one being nearly circumferential.

TABLE 3

Location	No.	%
Anterior	5	29%
Posterior	6	35%
Lateral	5	29%
Nearly circumferential	1	5.8%

The lesion size varied from 1-2 cm. in 6 or 25%; 2.5-3.5 cm. in 3 or 17.5%; 4-5 cm. in 4 or 23.5%; 6 cm.

in 2 or 11.6% and circumferential in 1 and not given in another.

TABLE 4

Size (cm)	No.	%
1-2	6	35%
2.5-3.5	3	17.5%
4-5	4	23.5%
6	2	11.6%
Circumferential	1	5.8%
Not given	1	5.8%

The largest number 8 (47%) were grade III adenocarcinomas; all were described as invasive except one where it was not stated.

TABLE 5

Type	No.	Invasive
Grade I	4	3
	(not known)	1
Grade II	3	3
Grade III	8	8
Grade III (mucinous)	1	1
Ca in adenomatous polyp	1	1

The number of sessions varied from one to five, with 70% controlled with 1-2 sessions.

TABLE 6

No. of Sessions	Patients
1	6
2	6
3	3
5	2

Complications were rare with only one patient having significant bleeding which did not require immediate repeat fulguration for control nor transfusion.

Most patients experienced minor discomfort, tenesmus or slight bleeding postoperatively. There have been no recognized perforations nor stenoses.

The post-op stay varied from one to eight days with an average of three days.

## TECHNIC

Fulguration is limited to lesions 10 cm. or less from the verge and probably those less than circumferential.

Spinal anesthesia is preferred and prone or lithotomy position is determined by the location of the lesion.

The sphincter is dilated maximally, retractors are preferred to a scope and are placed to expose the lesion. We find the combination of a g-u Deaver anteriorly, Heaney-Simons laterally and a Jackson vaginal posteriorly

\*Department of Surgery, Maine Medical Center, Portland, Maine 04102.

Present address: 191 Lincoln Avenue, Rumford, Maine 04276.

best. Two suctions — a tonsil suction for removal of blood and retracting plus a polyethylene tubing attached to the electrode pencil for the removal of smoke are helpful.

The Bovie unit is set on 2 for current and 40 for power. A needle tip rather than a ball is used because the smaller the surface area of contact, the greater the heat. This requires less power and a lower power for a longer time gives deeper coagulation.

Initially, the boundaries are done forming a coagulum which is scrapped off with a uterine curet. Bleeding occurs which is controlled by further coagulation. It has been found that when bleeding does not result from curettage of the coagulum, all the tumor has been removed. The whole procedure is repeated centripetally until a soft base is obtained.

At each session, as many as three to six fulgurations are done, trying to eliminate the tumor in one session.

Postoperatively a pack is not necessary and antibiotics are not used. Patients are up the same day or next and mineral oil is given each evening. Sitz baths provide symptomatic relief of and pain from dilatation and tenesmus. A fever of 99° to 103° for 48 hours is not unusual.

Two to three weeks later, the procedure is repeated with biopsy in the O.R. Patients are then examined every 4-6 weeks for six months by digital exam and scope. Later, examinations are at 4-6 months.

Of the 17 patients reviewed, the majority, 9, have been done in the past year so that this report is a preliminary one.

From Table 7, it can be seen that of the 3 early patients, 2 are alive and well 14 and 17 years later and the third died free of disease 6 years later.

Of the 2 patients in 1968, one is dead of her disease and the other underwent a Miles resection because the lesion was too difficult to expose on repeat fulguration.

In the 1969 group, 2 are free of disease and the third died following transverse colon resection for a second carcinoma.

Although the follow-up of the last group is not yet adequate all remain free of disease, but one underwent an anterior resection for a circumferential lesion at 10 cm.

There was only 1 death from cancer, this was in an

TABLE 7

## FOLLOW-UP

Period	No.	Status
54-58	3	2 alive and free of disease, 1 died 1964, at autopsy free of disease
68	2	1 died of recurrence at 2 yrs. other had A-P resection after 2nd session because exposure too difficult
69	3	2 free of disease 1 died following a transverse colon resection for a 2nd cancer. At autopsy rectum negative
70-71	9	8 free of disease 1-12 months 1 underwent anterior resection

83-year-old female with a grade III mucinous lesion who was felt inoperable because of COPD and incurable because of the size and extent of her tumor. She survived two years and was the only recurrence to be discovered after the disease had appeared to be eradicated.

Overall survival to date is 70%, with an additional 2 or 11.6% of the nonsurvivors dead of other causes. Twenty-nine percent (29%) have been followed 2 years or more and are free of disease. 52.8% have been followed less than 2 years and are free of disease.

TABLE 8

Status	No.	%
Alive and well, only treatment	12	70%
Alive with disease	?	
Dead of disease	1	5.8%
Dead of other causes	2	11.6%
Others not controlled	2	11.6%

TABLE 9

	No.	%
Failures	3	17.4%
Survival > 2y without disease	5	29.0%
Survival < 2y without disease	9	52.8%

## DISCUSSION

We are presenting fulguration as a primary method of first choice in certain low lying rectal cancers. This is not a second best method or mere palliation in patients inoperable or incurable because of their cancers or other problems.

The established Miles resection provides a 45-60% 5-year survival with a 5% operative mortality, considerable morbidity, genito-urinary dysfunction and a permanent colostomy.

In our group, 12 were good risks for Miles resection, 3 fair, and 2 poor.

TABLE 10

## RELATIONSHIP OF RESULTS TO RISK

Risk	No.	Result
Good	12	9 alive, 2 other Rx 1 dead other cause
Fair	3	1 dead
Poor	2	1 dead

The results of this study and Dr. Madden's<sup>1</sup> indicate that the more favorable the candidate is for cure by abdominal-perineal resection, the better will be the result with fulguration.

A valid question with regard to the use of fulguration in patients with an unknown stage of disease exists. Probably those with only local invasion will be cured with fulguration or the Miles resection. Those with lymph node involvement can not be determined without laparotomy. Those with regional lymph node in-



# Mediastinoscopy in the Diagnosis of Pulmonary Lesions\*

JEREMY R. MORTON, M.D.

Clinical methods for determining the stage of a neoplasm are important in selecting proper therapy and in evaluating the end results of treatment. The low overall survival of patients submitted for lung resection for bronchogenic carcinoma<sup>1-4</sup> has prompted a continued search for simple methods of determining the stage of pulmonary carcinoma in an effort to avoid thoracotomy in patients with nonresectable or incurable disease. Scalene node excision was employed initially<sup>5</sup> to detect lymphatic spread in lung cancer, however, only 10% of patients having lung cancer have a positive scalene biopsy. Mediastinotomy has also been employed by either a cervical approach<sup>6</sup> or more recently, by a parasternal approach.<sup>7</sup> These procedures have enhanced the chances of detecting mediastinal node metastases, but have not gained wide acceptance.

Carlens<sup>8</sup> demonstrated that both hilar areas and the middle and the posterior mediastinum could be extensively explored using an instrument similar to a laryngoscope introduced through a small suprasternal incision with remarkable safety and essentially no morbidity. The technique rapidly gained popularity in Europe, but has been accepted slowly in this country. Prior to the use of mediastinoscopy, approximately 40% of patients undergoing thoracotomy for carcinoma were found to be nonresectable. If the thoracotomy was preceded by mediastinoscopy in all patients considered for lung resection, the number of nonresectable cases was reduced to 10%.

In a recent publication, Ashbaugh<sup>10</sup> reviewed the experience of 36 authors with 9,543 mediastinoscopies and found the overall mortality of the procedure to be 0.09%. The complication rate was 1.5% with hemorrhage, pneumothorax, recurrent nerve injury, and infection occurring most frequently. Only 11 patients (0.11 percent) required thoracotomy for bleeding. He found that the percentage of positive biopsies obtained varied considerably among the different authors depending on their indications for mediastinoscopy, but that overall, 38% of the mediastinoscopies were positive and half of these had positive nodes bilaterally.

General anesthesia is used by most surgeons performing mediastinoscopy because of the convenience to the surgeon and the patient. Because of the frequent association of chronic pulmonary disease with carcinoma of the lung, however, a significant percentage of patients under investigation for carcinoma are poor candidates for general anesthesia. Further, since it is frequently desirable to examine frozen sections of several biopsies during the

mediastinal dissection, the anesthesia time required for the procedure may be prolonged. We have found that the procedure is remarkably well tolerated under local anesthesia and during the past 18 months we have performed 95 mediastinoscopies using this technique with results comparable to those obtained using general anesthesia.

Preoperative medication must be adequate when mediastinoscopy is performed under local anesthesia. The frequent association of advanced age and chronic lung disease has often made it difficult to judge the appropriate dose of preoperative medication. For this reason, a moderate dose of narcotic and barbiturate with atropine has been administered before bringing the patient to the operating room. Then supplemental intravenous narcotics or diazepam (Valium®) have been given during the procedure.

The skin and subcutaneous tissue of the suprasternal area are infiltrated with 1% Lidocaine® as are the strap muscles and the periosteum of the posterior surfaces of the clavicular heads and sternum (Fig. 1a). In our experience, 10 cc of anesthetic agent has been sufficient. Intratracheal injection of 2 cc of anesthetic may be used in addition to suppress cough. Despite the absence of local anesthetic agent below the level of the suprasternal notch, manipulations within the mediastinum are remarkably well tolerated by the awake patient. The only maneuver that may produce significant discomfort to the patient is displacement of the trachea. The mediastinum receives a rich nerve supply from the vagus nerve, the three cervical sympathetic ganglia and the thoracic sympathetic ganglia.<sup>11</sup> Our experience and the earlier experiences of Harken<sup>6</sup> indicate, however, that there are few pain fibers within the tissues surrounding the trachea and great vessels.

Following the technique described by Carlens,<sup>9</sup> a small transverse incision is made above the suprasternal notch and the underlying tissues separated to expose the trachea (Fig. 1b). A plane is developed beneath the pretracheal fascia and extended by blunt finger dissection to the level of the carina. As the palpating finger is advanced into the mediastinum, one is able to palpate the innominate and carotid arteries, aortic arch and descending aorta as illustrated in Figure 2. Abnormal lymph nodes may often be localized by palpation before the mediastinoscope is introduced. After inserting the mediastinoscope, the areolar tissues about the carina and main stem bronchi are separated with a blunt instrument until a lymph node is isolated. The minimum amount of dissection necessary to obtain a safe biopsy is performed. Before biopsying any structure, aspiration is performed to avoid the inadvertent biopsy of a vessel. The nodes lying anterior to the ipsilateral main stem bronchus are biopsied first. If these are negative, dissection is carried beyond the carina in

\*From the Cora and Webb Madding Department of Surgery, Baylor College of Medicine and the Baylor Affiliated Hospitals, Houston, Texas.

Reprints: Jeremy R. Morton, M.D., 321 Brackett Street, Portland, Maine 04102.

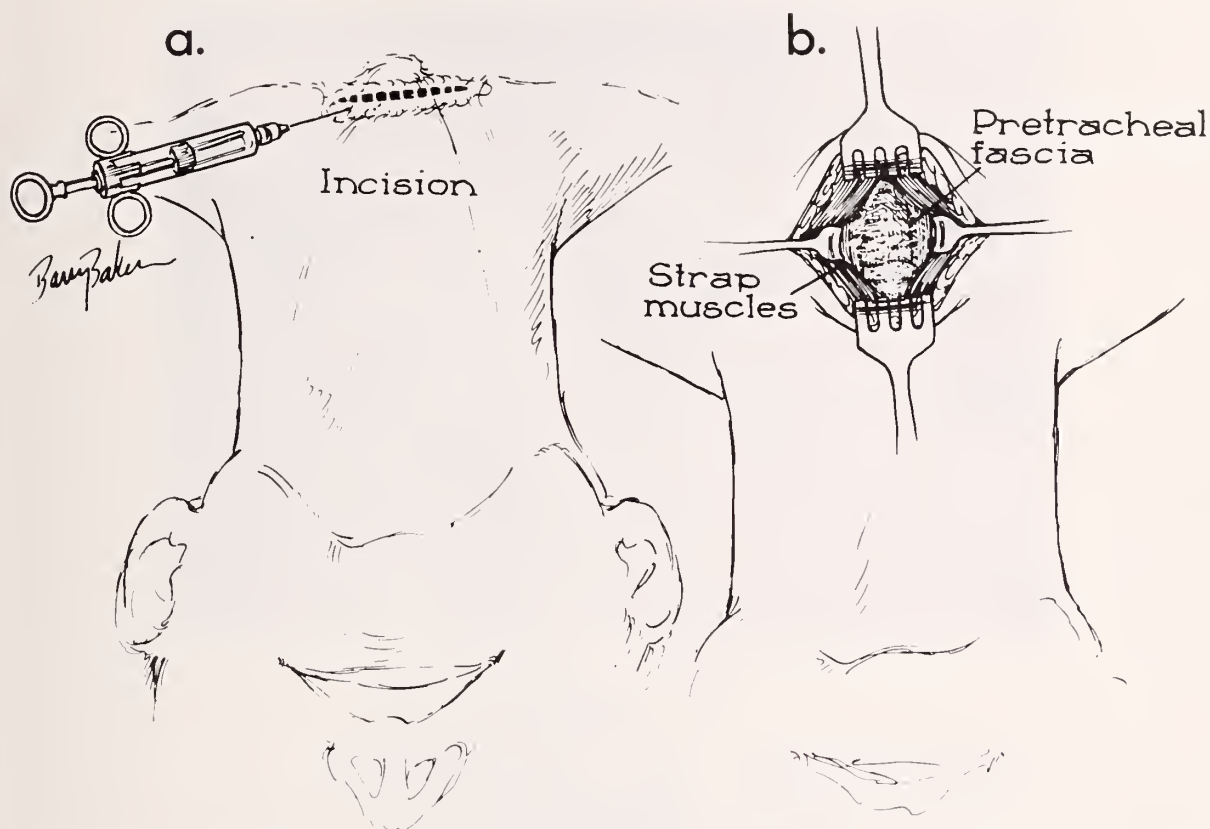


Fig. 1. Drawings illustrating a) location of incision and infiltration of local anesthetic and b) exposure of trachea through suprasternal incision.

the midline and a subcarinal node is biopsied. Care is taken to identify and avoid injury to the other structures in the area illustrated in Figure 3. No antibiotics have been used postoperatively and no infections have been encountered. A chest roentgenogram is obtained after the procedure if a pneumothorax is suspected. The patient is allowed to eat and ambulate as soon as the effect of the medications has subsided. Seldom is anything other than aspirin required for analgesia during the postoperative period.

#### RESULTS

Mediastinoscopy has been performed at our institutions as a routine procedure on most patients with pulmonary lesions suspected of being carcinoma where resection is considered. It has also been used to obtain a tissue diagnosis in nonresectable cases where other diagnostic techniques have failed. Patients with large or centrally located lesions have most often yielded positive biopsy, but a surprising number of patients with small peripheral lesions have had positive nodes as well. One hundred sixteen patients underwent mediastinoscopy, 21 under general anesthesia and 95 under local anesthesia. Seventy-seven of these had carcinoma and the remaining 39 had nonmalignant lesions as indicated in Table 1. Of the entire series, 51 patients had diagnostic node biopsies at mediastinoscopy. Of the 77 patients with carcinoma, 46 (60

percent) had positive nodes on mediastinoscopy and were managed nonoperatively. Thirty-three of these patients are known dead with a mean survival of four months. Most of the remaining patients are alive at less than four months or presumed dead and none are alive beyond one year. Thirty-one patients with carcinoma had negative node biopsies at mediastinoscopy and were subsequently explored. Thirteen of these patients were nonresectable, 10 required pneumonectomy and eight had lobectomy. Follow-up has not been sufficiently long to evaluate survival in the resected group. Those patients with negative nodes who were nonresectable were found for the most part to have tumors invading the heart or descending aorta. The 10 patients with sarcoid all had diagnostic mediastinal biopsies.

#### MORTALITY AND COMPLICATIONS

There were no deaths and few complications in this group of patients having mediastinoscopy. Two patients developed pneumothorax on the right and these were successfully treated in each instance by tube thoracostomy. One patient developed tumor in the suprasternal incision due to implantation of an oat cell carcinoma.

#### DISCUSSION

The short survival of our patients with positive mediastinal biopsies was impressive and similar to that reported

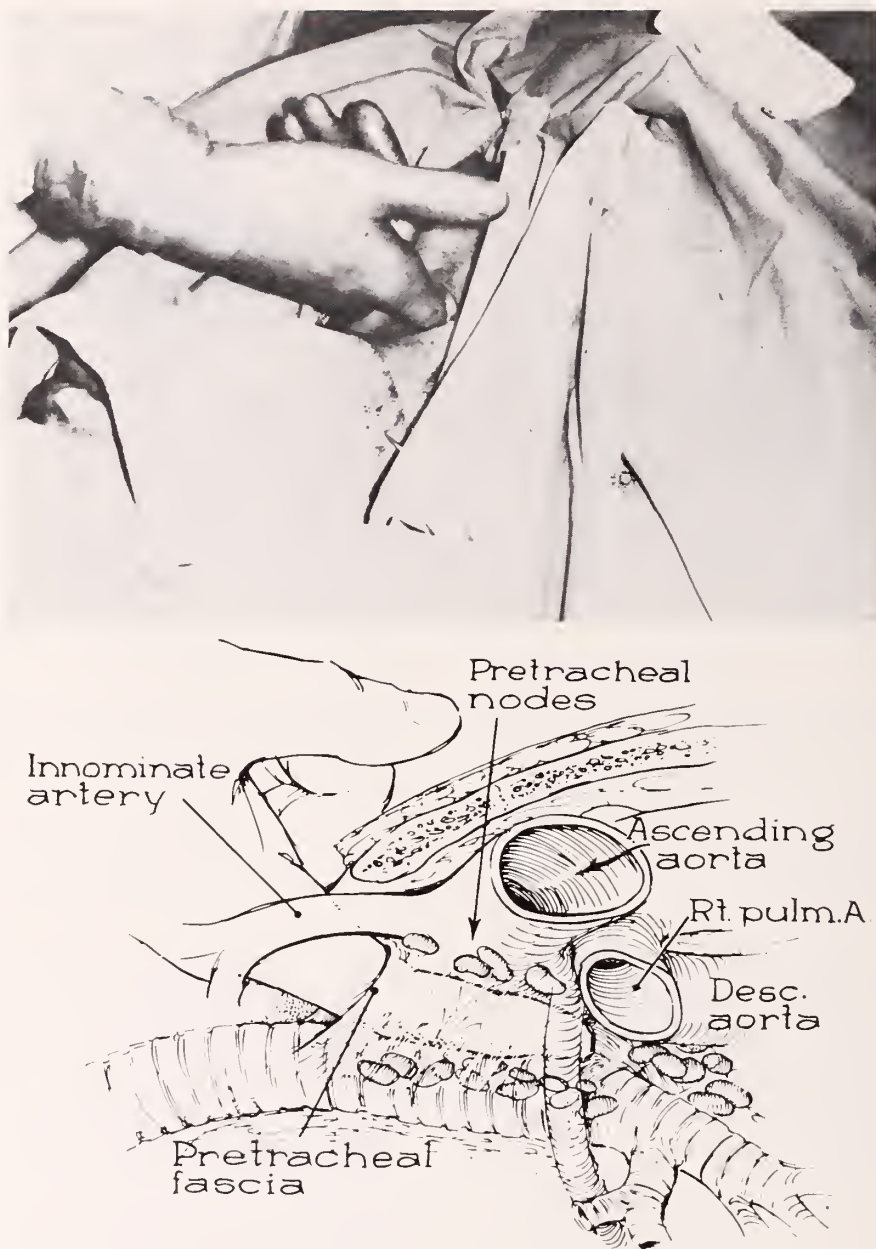


Fig. 2. Photograph and drawing illustrating technique of mediastinal palpation and anatomy encountered.

by others.<sup>12</sup> Accordingly, it would appear that in 60 per cent of our carcinoma patients, unnecessary thoracotomy was avoided by mediastinoscopy. The significance, however, of positive mediastinal nodes in otherwise surgically favorable lesions remains in question. In a series of 278 pulmonary resections for cancer reported by Holland,<sup>13</sup> 26 of 96 patients surviving for three or more years had positive hilar or mediastinal nodes in the resected specimen. In the Memorial Hospital experience,<sup>14</sup> eight of 61 five-year survivors had node involvement. These figures suggest that a few patients may benefit from pulmonary resection in spite of mediastinal node involvement.

The number of patients with negative mediastinoscopy who were subsequently found to be nonresectable was surprisingly high in our series when compared to the experiences of others.<sup>9</sup> One contributing factor may be that most of these cases were done early in the course of our experience with the procedure when the mediastinal dissections were somewhat less complete. Except for these false-negative cases, our results with mediastinoscopy, particularly under local anesthesia, have been gratifying.

#### SUMMARY

Our experience with one hundred sixteen consecutive



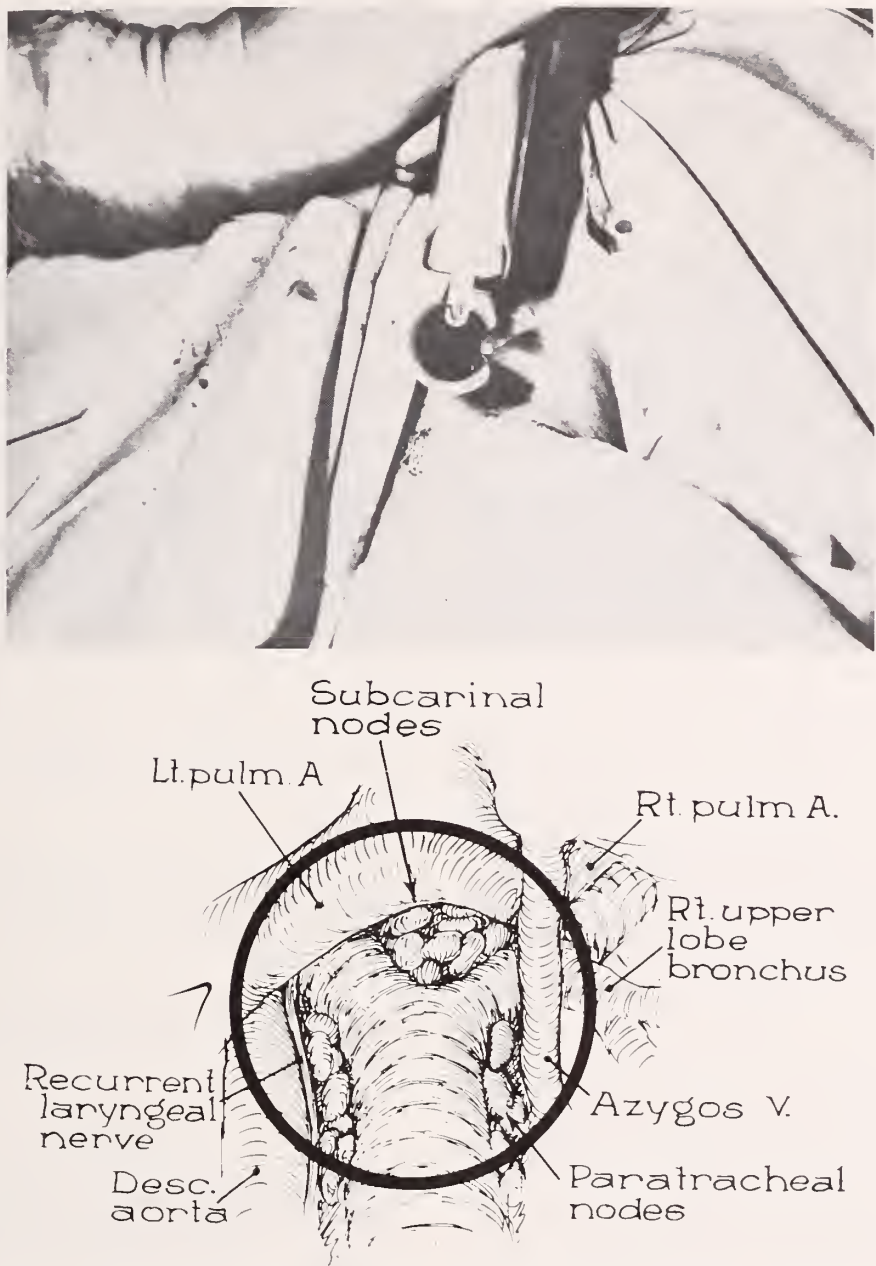


Fig. 3. Photograph and drawing illustrating relationship of anatomic structures to mediastinoscope.

mediastinoscopies was reviewed. Ninety-five of these were performed under local anesthesia. This technique was well tolerated and offered the advantage of greater simplicity and safety by avoiding general anesthesia in a group of patients who often had limited pulmonary reserve. The results using this technique were comparable to those where general anesthesia was employed. The value of mediastinoscopy in the diagnosis and staging of lung cancer is emphasized. The short survival in our patients, where mediastinal lymph node metastases were demonstrated, suggests that many unnecessary thoraco-

tomies were avoided by mediastinoscopy.

TABLE 1		
FINDINGS AT MEDIASTINOSCOPY		
Positive		86
Neoplasm	72	
Non-neoplastic	14	
Sarcoid	10	
Tuberculosis	4	
Negative		30
Total		116

TABLE 2

STAGING OF LUNG CANCER WITH MEDIASTINOSCOPY		
Positive biopsy obtained		46
Negative biopsy		31
Nonresectable	13	
Pneumectomy	10	
Lobectomy	8	
Total		77

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## FULGURATION AS PRIMARY TREATMENT OF CANCER OF THE RECTUM

*Continued from Page 237*

involvement may not be curable even by radical surgery. Those with local lymph node involvement may be curable in a high percentage of cases by surgery. What is needed is a five-year prospective study of a group of patients undergoing Miles resection with particular attention paid to survival in those with various stages of lymph node involvement. These could be compared to the survival of a group such as ours where the staging is unknown but certainly some must have lymphatic spread. Strauss<sup>2</sup> has suggested that fulguration produces favorable survival rates when compared to that for radical surgery even when there is lymphatic involvement. An immunologic antigen-antibody response is postulated but not proven.

Since these patients were reviewed, an additional 3 patients have undergone fulguration at Maine Medical Center.

## ACKNOWLEDGMENT

We wish to acknowledge Louis Asali, M.D. for his instruction in this technic.

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# Congenital Biliary Atresia and Heart Disease

## A Report of Three Cases in Two Generations

MARGARET MILLARD, M.D.\*

Biliary atresia is not usually thought of as a genetic defect. Although the etiology is not well understood, it is generally assumed that an insult to the developing fetus during the critical stage of development of the biliary tree may engender structural abnormalities of the bile passages. The possibility of some cases being genetically determined is not even mentioned in most of the current pediatric literature.

However, there are many reports of the familial incidence of biliary atresia in the older journals, especially those prior to 1900.<sup>1,2,3,4</sup> It is difficult to explain this, except on the basis of a syphilitic infection of one of the parents, or an error in reporting a case of overwhelming fatal septicemia with jaundice as biliary atresia when in fact it was nothing of the kind. A persistent infection of the mother, which affects successive children in turn, has also been invoked to explain why occasionally more than one child in a family dies of congenital abnormalities of the bile ducts.

The *Lancet* of 1879 reports one of these early families<sup>3</sup> where five out of eight children of one family died with biliary atresia. In 1901, the *Lancet* reported another family where one autopsied patient showed occluded bile ducts and five sibs succumbed with jaundice.<sup>5</sup> A more recent report is that of Sweet,<sup>6</sup> who reported three cases in one family, with associated heart defects in two of them. There is therefore some precedent for believing that in certain cases — including those interesting reports of congenital extrahepatic biliary abnormalities in the trisomy 17-18 syndrome<sup>11,12,13</sup> — biliary atresia may be genetically determined.

In the recent literature, there are only five reports of biliary atresia occurring in a familial form.<sup>6,7,8,9,10</sup> The family reported here is the only one where the condition has occurred in members of two generations and in relatives of the father.

### CASE 1

L. P. was delivered by cesarean section of a 29 year old gravida 5 mother. Three siblings are healthy, and one brother has congenital heart disease, thought to be pulmonic stenosis. Mild neonatal jaundice disappeared by the fifth day, but at two weeks she became severely icteric, and this has persisted. A heart murmur was noted at birth, and cyanosis has gradually developed.

The child was admitted to hospital for diagnostic studies at the age of one month. Rose Bengal excretion tests indicated that there was some excretion of the radioisotopic tracer into the bowel, seeming to exclude the possibility of complete biliary atresia. Lab results were as follows: cholesterol 390 mg percent, albumen 2.7 grams, total protein 7.05 grams, total bilirubin 17.3 mg percent. The SGOT and LDH were elevated. The stools were

clay colored and the urine dark. A diagnosis of neonatal hepatitis and tetralogy of Fallot was made, and the child was discharged home, to be followed in cardiac clinic.

The baby did rather poorly at home, gaining weight extremely slowly, and suffering from hypoxic spells, otitis and urinary tract infections. At the age of four months, she was readmitted for surgical exploration.

Laparotomy showed a functioning gallbladder full of bile and well formed hepatic ducts. Biopsy of the liver was carried out. The parenchymal cells were large, with a granulomatous or xanthomatous appearance of the cytoplasm. There were only rare ducts of Hering and few bile ducts of the first order, containing no bile. No bile ducts of the second order were seen. In a few areas, fibrosis was seen in the portal area. No giant cells were identified. The total bilirubin before surgery was 18.4 mg, of which the direct bilirubin was 13.2 mg. One week later, it rose to 30 mg. The total protein was 8 grams, the albumen 2.4, and the cholesterol 245 mg. The karyotype was normal. During this admission, she developed a urinary tract infection with *Proteus* and a suppurative otitis which grew out *Pseudomonas*. At the age of five months, she was discharged home weighing 8 pounds, 1 ounce.

The interesting point in the family history is that the father of this child had one healthy sibling and three who died in infancy. Since they were autopsied, we can be certain that two of them did, indeed, have biliary atresia, and two had congenital heart disease. The inheritance of biliary atresia through the father's side has never been reported, and, of course, the supposition that previously reported cases have been caused by latent viral infection of the mother is clearly ruled out here. Case reports on these three sibs follow.

### CASE 2

J. P. died at the age of eight months. He had been jaundiced since birth. A laparotomy had shown that there was adequate passage between the gallbladder and duodenum, and somewhat small passages in the hepatic duct. He also had cyanotic congenital heart disease.

Autopsy showed absence of the intrahepatic ducts, hypoplasia of the extrahepatic ducts, a diverticulum of the colon at the hepatic flexure ending blindly in the capsule of the liver, with leakage of fecal material from it, and acute local peritonitis, absence of the pulmonary artery, origin of the aorta from the right side of the heart, and an interventricular septal defect.

### CASE 3

J. P. died at the age of twenty-one months. She had been jaundiced since three days of age. Death was caused by pneumonia. An autopsy showed a gallbladder containing bile, but with no duct entering the intestine, and cirrhosis of the liver was present. A right upper lobe pneumonia was also present.

### CASE 4

R. P. died at the age of eleven months. He had been cyanotic since birth. An autopsy showed persistent truncus and an interventricular septal defect. The immediate cause of death was bronchopneumonia.

## DISCUSSION

Familial giant cell hepatitis has been reported frequently, and Smetana et al<sup>15</sup> postulate that a defect in the de-

\* Maine Medical Center, Portland, Maine 04102.



velopment of the hepatic cells may cause both biliary atresia and giant cell hepatitis, alone or in combination. The developmental anatomy of the biliary system is so complex that eight different kinds of biliary atresia have been described. Whitten and Addie<sup>8</sup> also consider that a defect in the germ plasm arrests the normal embryological liver cell development. A great many embryological disturbances, for example, disturbances in the growth of the bulbar cordis and maldevelopment of the septa of the heart, arise at about the 31-36 embryonal days when the biliary system is being developed.

The mode of inheritance does not fit into either a recessive or a dominant type. The father of L. P. is apparently normal. It is not unknown for a dominant gene to be passed on to a child although not phenotypically expressed in the parent. However, this has not been reported in a gene which is lethal in childhood.

Multifactorial inheritance is invoked to explain the familial incidence in such conditions as congenital heart disease.<sup>14</sup> In this case, an underlying process, controlled by a large number of genes with a small effect, is related to a biological threshold so that all individuals on one side of the threshold are affected and all on the other side are unaffected. The environmental exposure may be subtle and difficult to define, and yet may be the only way to control the nonappearance of the unwanted trait in other pregnancies. It seems that this may also be the mode of inheritance here.

The report of Alpert et al<sup>13</sup> of neonatal hepatitis and

biliary atresia is of great interest. It may be, as Alpert suggests, that a viral infection is the environmental insult which pushes an individual with many genes predisposing to biliary atresia over the threshold. Viruses can produce chromosomal damage, although they have not yet been proved to cause nondisjunction. The relationship needs further exploration.

#### ACKNOWLEDGMENT

I thank Dr. Edward C. Matthews for his help and encouragement, and for permission to publish Case 1.

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## Fall Meeting of the M.M.A. House of Delegates

Sunday, December 5, 1971

St. Joseph Hospital, Bangor, Maine

12:30 P.M. — Registration; 1:00 P.M. — Dinner; 2:00 P.M. — Meeting

10:00 A.M. — Meeting of the Executive Committee

Meeting of the Committee on Nominations

# New Therapeutic Agents for Peptic Ulcer

NEWELL A. AUGUR, JR., M.D.\*

Peptic ulcer is a recent disease of man and was recognized less than two hundred and fifty years ago. There is no substantial indication that the medical therapy of the disease has improved since the eighteenth century when Cruveilhier recommended milk and chalky substances to his patients. Four of the major difficulties that beset current efforts to evaluate or design new therapeutic agents are:

1. The peptic ulcer syndrome is not a disease entity. In the patient population with this syndrome at least three different groups have been identified. The smallest of these is peptic ulcer associated with a gastrin secreting tumor first described by Zollinger and Ellison. The much larger second and third groups are duodenal ulcer with or without a secondary gastric ulcer and primary gastric ulcer. It is suspected that the latter two groups have different etiologies. Other distinct patient subsets may yet be identified. Therapy for these three groups has been defined precisely only for the Zollinger-Elison syndrome. The therapeutic management of the duodenal and primary gastric ulcer patients is more arbitrary and what may be successful in one may be less so in the other.

2. The basic pathophysiology of peptic ulcer is not understood. Hydrochloric acid and pepsins in some minimal amount are required, but they seem to be only of secondary importance and no causal factors have been identified. Therapy is thus limited to the traditional efforts of diminishing acid secretion, hydrogen ion concentration, and peptic activity of the gastric juice.

3. Therapeutic effectiveness may refer to pain relief, to the rate at which the ulcer heals, or to the frequency of relapse. These three desirable goals should be kept distinct from other possibly unrelated effects such as decreased acid secretion, decreased hydrogen ion concentration, etc.

4. Until recently most reported investigations of ulcer therapy have been anecdotal or poorly designed. These studies never proved the value of the proposed therapy in spite of the ambient enthusiasm. A recent example of the difficulty in evaluating initial poorly controlled reports is provided by the saga of gastric freezing. This technique was published in 1962 and widely used before its therapeutic effectiveness had been examined rigorously. Such examination recently completed has indicated that the technique has no therapeutic value.

Any studies of a therapeutic agent then should be considered clinically from these points: which peptic ulcer group is being studied, what measure of therapeutic

effectiveness is being evaluated, and is the design of the study appropriate. A brief review of three measures of therapeutic effectiveness follows:

*Pain relief* — Since ulcer pain seems related to the presence of acid, it is surprising to find such meager evidence supporting the concept that antacids provide pain relief. There are several studies suggesting that injections of sterile water or saline are as effective in relieving pain as antacids.<sup>1,2</sup> A comparison of three antacids did show that two of the three antacids were more effective in relieving pain than a placebo.<sup>3</sup> The study's results are compromised, however, but inadequate design.

*Frequency of relapse* — Treatment of any syndrome such as peptic ulcer characterized by remissions and relapses occurring for unknown reasons over long periods of time cannot be critically evaluated by short term studies.

Within two years more than 50% of primary gastric ulcer patients can be expected to have a recurrence. There are two long-term studies (two years) which both report a significantly decreased number of recurrences in duodenal ulcer patients treated with anticholinergics.<sup>4,5</sup>

Stilbestrol®, 1 mg. daily, for six months has also been shown to have a beneficial effect on the short time and long-term course of duodenal ulcer disease.<sup>6</sup> Patients so treated were free from symptoms during the six months while on the drug and did favorably for the next five years. These results were obtained in only those patients with an ulcer history of less than 10 years. This therapy, which appears to be beneficial, is unfortunately impractical in men because of the usually associated diminution or loss of sexual potency and occasional gynecomastia.

*Rate of ulcer healing* — The goal of all short-term ulcer therapy is to heal the ulcer. How fast does this occur? In a deformed duodenal bulb, it is often impossible to identify radiologically the presence of an active ulcer, much less measure its size. Therefore, the healing rate of duodenal ulcers is not well documented. Fortunately, gastric ulcers are more assessable radiologically, and their response to therapeutic programs can be more precisely evaluated. In a series of marvelous papers dating from 1952, Doll has reported objective critical trials on the healing rate of gastric ulcer.<sup>7</sup> He has found that the maximal healing rate of primary gastric ulcers is obtained by those patients who are hospitalized, not smoking, and on a regular diet. This healing rate has not been significantly accelerated by bland diet, an ordinary diet plus half a pound of brains, milk drip with 40g of NaHCO<sub>3</sub>, phenobarbital, anticholinergics, extract of fresh cabbage, estrogens, or a polysaccharide obtained from seaweed.

In the last few years, however, two drugs have been tested which show that the gastric ulcer healing rate may be accelerated. The first of these is carbenoxolone so-

\*Department of Medicine, Section of Gastroenterology, Maine Medical Center, Portland, Maine 04102.



dium, the trade name of which is Biogastrone®. This drug is available on the European Market, but it is not available in this country. The drug is synthesized from glycyrrhizic acid, one of the many constituents of liquorice root. The history of this drug is brief and interesting. Liquorice has been long recommended in folklore as a cure for indigestion. In 1946 Revers, a Dutch physician, noted that a local pharmacist was acquiring a reputation for successfully treating peptic ulcer patients with large quantities of crude powdered liquorice extract. Revers used it and was impressed with his results. He observed that 20% of his patients developed water retention and this mineralocorticoid-like action of liquorice drew most attention. When several subsequent studies showed that it was not an adequate substitute for cortisone in the treatment of adrenal insufficiency, interest lagged. One pharmaceutical firm, however, continued to work on the potential therapeutic value of liquorice in peptic ulcer and eventually developed carbenoxolone sodium. The drug is not liquorice. It is an ester synthesized from glycyrrhizic acid, one of the constituents of liquorice root. Doll used this drug in his clinical trials and found that it did accelerate the healing of gastric ulcers in outpatients.<sup>7</sup> This healing rate was not increased by the concomitant use of estrogens and was not greater than that of the hospitalized patients. When the drug was given to hospitalized patients, i.e., those with the maximal healing rate, there was no further increase in this rate. Essentially, then the drug enhances the healing rate of gastric ulcers in outpatients, but this effect is indistinguishable from the effect of hospitalization.

The drug's effectiveness in the treatment of duodenal ulcer is still debatable.

What is the pharmacology of carbenoxolone? The drug is rapidly absorbed from the stomach and primarily excreted in the bile as a glucuronide. It does not effect acid secretion; it does not change gastric motility, and it does not seem to alter normal processes of tissue growth and repair.<sup>8</sup> With increasing dosage, side effects become more frequent. These effects are weight gain, edema, hypertension, and hypokalemia. When gastric ulcer patients are given thiazides with the drug, the side effects are prevented and the accelerated healing rates remain. When spironolactone, the aldosterone antagonist, is given in place of thiazides, side effects are again blocked but peculiarly the therapeutic properties are also completely blocked.<sup>9</sup> There is no satisfactory explanation for this. The precise action of the drug to increase the healing rate of peptic ulcer remains unknown. There is not enough information yet to comment further on the baffling report that crude liquorice from which glycyrrhizic acid had been removed (i.e., the principal of carbenoxolone sodium) was without side effects mentioned above, but did improve gastric ulcer patients.<sup>10</sup>

The second new and potentially valuable drug is a synthetic sulfated polysaccharide which inhibits gastric pepsin. The commercial name of this drug is Depepsen®. It, too, is currently unavailable in this country for general use.

Since the 1930's, the existence of compounds with antipeptic activity has been recognized. In 1954, Heparin® and other sulfated polysaccharides were found to inhibit the proteolytic activity of pepsin on casein.

Subsequently, a pharmaceutical firm synthesized a variety of sulfated polysaccharides and tested them for antipeptic activity. Generally, it was found that the antipeptic activity increased with increasing molecular weight and sulfate content of the polysaccharides. One of these substances, a sulfated amylopectin, was found to protect against ulcers in pyloric ligated rats and in guinea pigs with histamine induced ulcers. It was then shown that the drug also inhibited the peptic activity of gastric juice in patients with duodenal ulcer. This inhibition occurred without change in the pH. The drug is not absorbed and has no recognized effect on gastric secretion. Since 1965, a double blind trial in patients with primary gastric ulcer has been carried out at the Manhattan Veterans Administration Hospital.<sup>11</sup> This study is being done on inpatients. As mentioned above, there is no therapeutic agent including carbenoxolone sodium that has been shown to accelerate the healing rate of gastric ulcers in inpatients. In the Depepsen study which now has more than 50 patients, the drug has accelerated the healing rate of gastric ulcer in hospitalized patients. How does this drug work? There are two plausible mechanisms. One is that there is a combination between the pepsins and the drug forming a complex with less peptic activity. This reduction of peptic activity would then presumably permit more rapid healing. The second proposed mechanism is that there is a combination between drug and protein substrates at the edge of the ulcer. This combination protects the substrate from digestion by pepsins and thereby enhances ulcer healing. Of course, the therapeutic mechanism may be entirely different than either of these and unrelated to the antipeptic activity.

#### SUMMARY

This paper has reviewed the published studies of therapeutic agents for peptic ulcer in man. Other potentially valuable drugs which reduce gastric acid secretion are being evaluated in animals.<sup>12</sup> Antigastrin agents have particular theoretical appeal in this group. In spite of recent interest in the gastric mucosal barrier which prevents a leak of secreted hydrogen ions from the lumen back into the stomach wall,<sup>13</sup> there are no drugs identified which might enhance this function.

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## NEW THERAPEUTIC AGENTS FOR PEPTIC ULCER

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# Maine Heart Association Notes



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## Chronic Occlusive Arterial Disease of the Limbs

JESS R. YOUNG, M.D.\*

Chronic occlusive arterial disease of the limbs may cause no symptoms in mild cases, intermittent claudication in moderate cases, and gangrene and amputation in severe cases. Most patients with occlusive disease are men, beyond the age of 45 years, and they have symptoms in the legs rather than in the arms. With the aging of our population, the number of patients with this problem will increase. Proper management requires an accurate diagnosis of the basic disorder, an evaluation of the extent and the rate of development of the occlusive process, and an assessment of the patient's general status.

### ETIOLOGY

The major cause of occlusive arterial disease is atherosclerosis obliterans (ASO), which accounts for more than 95 percent of occlusions of the extremities. Less common causes included thromboangiitis obliterans (Buerger's disease), other forms of arteritis, chronic ischemia resulting from embolic arterial occlusion in a limb that survives the acute episode, arterial trauma, thrombosis of aneurysms, and dissecting aneurysms.

### SYMPTOMS

The most common and earliest symptom of patients with occlusive arterial disease is intermittent claudication. This is a discomfort that occurs only when the patient is walking, and disappears within one or two minutes after he stops walking. The discomfort is variably described as a cramping, a pain, an ache, a sense of fatigue, tiredness, or a heaviness. The patient need not sit down to obtain relief, and at no time is the discomfort experienced when the patient is lying, sitting, or standing. The location of the symptoms is dependent on the location of the occlusion, and the discomfort can occur in the foot, calf, thigh, buttock, or arm.

Pain at rest indicates a more severe degree of ischemia. It is generally worse at night and may be temporarily relieved by dependency of the limb or by walking. The patient may find that he can sleep only by sitting in a chair with his legs down. The pain is ischemic ulceration and gangrene is more severe, usually not relieved by dependency, and is difficult to control even with narcotics.

### DIAGNOSIS

To determine the presence and severity of arterial insufficiency, no unusual or elaborate equipment is necessary. An adequate evaluation may be accomplished in any physician's office.

The most important finding on physical examination is an absence or a decrease in amplitude of arterial pulsations. A good index as to the severity of ischemia is the change in color of the feet with alterations in positions of the limb. After elevating the leg for about one minute, an abnormal pallor in the foot and leg will appear when there is significant ischemia. On subsequent dependency, there is a delay in filling of the veins beyond the normal 10 to 15 second period. When the color returns, it may be bright red, the so-called "rubor on dependency." As arterial insufficiency worsens, ischemic ulcers may develop on the toes and dorsum of the foot.

Arteriography is not necessary unless arterial surgery is contemplated.

### TREATMENT

#### Medical Treatment

All patients are asked to refrain from smoking. Smoking will cause peripheral vasoconstriction in almost all persons and is quite likely an important etiologic factor in arteriosclerosis. The patient with thromboangiitis obliterans must strictly avoid all forms of tobacco, for hypersensitivity to nicotine is believed to be the etiology of this disease.

Postural exercises are time consuming and have proved ineffective. However, walking is of great benefit in developing collateral circulation, and the patient is asked to walk as far and as often as possible. Continued walking past the point of intermittent claudication eventually will bring about greater increase in collateral flow than stopping at the first sign of claudication.

The patient with severe ischemia is advised to elevate the head of the bed (4 to 6 inches) to increase the blood flow to the feet. Great care must be taken to prevent further damage to the severely ischemic limb. The heel should be protected with either a layer of sheep skin or a padded boot. Pressure from bed clothes should be prevented by the use of a foot cradle.

Repeated use of analgesics may be necessary for temporary relief of ischemic pain. A tranquilizer may be helpful in alleviating the anxiety often associated with severe pain and may potentiate the effect of the analgesics. Narcotics should be used

\*From the Department of Peripheral Vascular Disease, The Cleveland Clinic Foundation, Cleveland, Ohio.

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with caution because the chronicity of ischemic pain may lead to addiction.

The precipitating cause of many severely ischemic lesions is trauma from mechanical, chemical, or thermal sources. Each patient should therefore be given detailed instructions concerning the care of his extremities and the avoidance of trauma. He should be carefully advised regarding care of his nails, avoidance of hot and cold temperatures, and proper treatment of athlete's foot.

The value of oral vasodilator drugs is a controversial subject. Most authorities have not found them to be effective, but if some attempt at oral vasodilatation is desired, an ounce of whiskey or brandy or a glass of wine, three or four times daily, may be recommended.

An attempt should be made to control other associated disease. Phlebotomy may help to decrease the occurrence of thrombotic episodes in polycythemia vera. Reduction of hyperlipidemia and control of hypertension may have some effect in retarding progression of arteriosclerosis. Diabetes should be kept under good control, not only to retard atherosclerosis, but also to help to prevent complications such as infection and neuropathy which make the management of arteriosclerosis more difficult.

#### *Surgical Treatment*

In selected patients, arterial surgical reconstruction may have much to offer. In some patients with long periods of continuing patency of vessels after surgery, especially in those patients who are operated on for aortoiliac disease, the value of surgical treatment may be great. In other patients, especially those operated upon for femoropopliteal disease, secondary thrombosis will occur in a significant number within one or two years postoperatively, and may make this procedure of little value. In addition, many patients, either because of the diffuseness of their occlusive disease or because of severe associated disease are not suitable for treatment by surgery. The decision for operation should be made only after careful deliberation. Patients who could justifiably be considered to undergo surgical procedures would include those in whom intermittent claudication is severe enough to prevent them from working in a necessary occupation, those whose claudication has been steadily worsening, and those who are already suffering from rest pain, ulceration, or gangrene.

Sympathectomy can be of great value in certain patients. This procedure will dilate only the vessels of the skin and will not improve intermittent claudication. However, minor ischemic ulcerations or superficial gangrene may be healed with this procedure, and rest pain can be eased in those patients in whom arterial surgery is not possible.

#### CONCLUSIONS

The prognosis for patients with chronic occlusive arterial disease is probably better than is commonly believed. With proper evaluation, intelligent management, and cooperation from the patient, the loss of limbs and lives may be reduced to a minimum. Conservative treatment remains the keystone of therapy whether or not surgery is used.



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DEAN H. FISHER, M.D.  
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## Health Manpower Needs of the 70's

DEAN FISHER, M.D.\*

*The following paper contains excerpts from a presentation made by Dr. Dean Fisher before the Higher Education Planning Commission, University of Maine. Emphasis is placed on a health system in which the individual's own responsibility for making wise decisions of his own will be the foundation. Dr. Fisher has been the Commissioner of the Public Health Department since 1954.*

In considering the long range responsibilities of the Higher Education Planning Commission, I am less interested in short-term goals, and more interested in trying to estimate the strategy, concepts, and characteristics of the health system of the late 70's and the kinds of manpower which that system may then be requiring.

Obviously there will still be a need for the familiar array of troops and skills, with certain adaptations to technical changes, but the key roles may well be played by those who are now little more than distant voices; the economist, planner, statistician, behavioral scientist, communications expert, and so on.

We seem to consider our present manpower problems in health and welfare with the implicit acceptance of the belief that the system strategy is sound, and that our problems would be solved with more of the same, perhaps with some tinkering of details, such as methods of payment, numbers and location of people, etc. Much of my discussion is intended to suggest that present system strategy, priorities, and array of skills is no longer appropriate to the problems, resources or characteristics of our society.

To give an idea of the immensity of the total health system in the United States, and the potential manpower needs, the following estimates are cited:

Year	Total Expenditures	Per Capita	% GNP
1960	\$ 27 Billion	\$147	5.4%
1970	70	345	7.2
1980	175	814	9.8

In addition, it is said that there are, in eight Federal Departments, 145 programs involved with training health

related manpower. In Maine alone, we spend some \$200,000,000 per year for health services including, and closely related to, medical care.

In the absence of fundamental changes, there is every reason to assume that the 1960-1970-1980 expenditure curve will continue to some level where the rate of expenditure will be rejected. Furthermore, there is evidence from England which suggests that, within the present health system, any increase in system capability creates an added demand that is disproportionate to the increase in capacity. If this is true, then in the final analysis, costs, rather than meeting needs, will determine the maximum system size and capacity. I suppose one could make estimates of manpower needs at such a projected maximum level.

Health manpower needs may be put into two general classes:

1. Those related more or less closely to one-to-one medical or to dental services, and
2. Those not so related. (The economist, statistician, planner, or behavioral scientist, for example.)

In our feelings of a "health crisis," and of desperate manpower inadequacies, we are usually thinking of the first category above. There are commonly used manpower-population ratios, lifted uncritically from experiences elsewhere, that may be used to set priorities, to plan, or as tentative goals. There may be some disagreements about details of training and education, but no great mysteries are involved. These ratios are very crude, short-term, approximations, and are useful only while there are no major strategic, substantive, or conceptual changes in the health system.

Conditions may well force such changes to take place, and, if this occurs, manpower in the second category above will become more critical. Furthermore, the kinds of health problems that are emerging, and can be foreseen, and the kinds of technical knowledge and capabilities that are coming from the information explosion all suggest, very strongly, that the health manpower pool of the future may not even be as medically oriented as it is today. For example: How does one develop, or what should be developed, as a public posture if it becomes possible to directly manipulate genetic material? How

\*Commissioner, Department of Health and Welfare.



does one encourage rational public responses to complex changes in conditions, to subtle new capabilities or to changes in circumstances?\*\*\*

The key to the nature of the health system of the future may lie in the ability, or lack of ability, on the part of the public to address itself to alternatives with more rationality than is shown in response to the question of fluoridation.

If we look at our present society, we can make some projections about the nature of society of the future, the relative importance of problems to be resolved in its health system, and even of the nature of the health system itself, if, of course, we also assume no major catastrophe or cataclysm.

Our present system might be called a "have it done for us" kind of system. Historically, this is understandable with our previous experiences with mysterious diseases, the provision of care by an intellectual elite, or with religious associations.

Our conditions, problems and resources now are completely unique to our time and place. We are literate, affluent, consumer oriented and a mobile society. There are very few people who are isolated geographically. Transportation is universally available. Almost no one is beyond the reach of communication media. People, almost universally, are accustomed to getting the major portion of both their information and misinformation from communication media, radio, movies, TV, newspapers, magazines, billboards and so forth. We have achieved a remarkable degree of equity in resource distribution, and the trend will accelerate. We are becoming an urbanized society and being forced to face the fact that neither our cities, nor many of our common practices lend themselves readily to this transformation. There is a broad and noisy participation and equally noisy preservation of self-interests in the decision making process.

Our major problems are largely of the kind that result from decisions the individual or the group may make. Even the problems we have from a hostile environment are largely created by ourselves, and we either know or can find out what we are doing. There is very little mys-

tery about health problems, except for the human elements.

I have used fluoridation as an example. There are reasons to assume that better housing, city planning, and better food and income distribution would reduce morbidity and mortality. Our knowledge of, and techniques related to drug and alcohol usage are primitive but at least there is a suggestion that something may be done. We know very little about population dynamics, and the morbidity that may come simply from population density or the frictions that may be inherent in a dense non-homogeneous population. We actually know very little about the factors that appear to relate low income to morbidity. What results may be sought through family planning, and what are the variables to consider? What morbidities come directly from urbanization, affluence, mobility, consumerism, gadgetry, technical advances, or from economic competition, or even iatrogenics? What load is imposed on a health system by faddism, quackery, or irrationalism? To what extent may one expect to be able to modify behavior? We really know very little about family dynamics and the circumstances within which children live. We know very little about deviant or anti-social behavior. One could list questions such as these endlessly, but I think there is enough here to suggest that major modifications might well be the basic strategy of a more effective health system than we now have. Furthermore, the projected costs of our present system suggest that we shall be forced to move in this direction, and it is reasonable to assume that we may gradually find ourselves so moving without clear or conscious decisions or plans on the part of anyone.

One might hope, if we were to move into a system with some design different from our present one, that some of the inadequacies of the present system would not be repeated. In spite of expenditures, and investment, we are now said to be in a "health crisis" which however is difficult to recognize or measure in any objective terms. How much of the "crisis" is hysteria, how much false expectation, how much is "activism," how much is "health" is being used as a political or social lever; all are unknowns. No one has attempted any serious cost-benefit, or cost-effectiveness analysis of our present system. No one has defined the criteria by which a system would be considered successful. Until such time as these criteria are available, we shall always be in some kind of undefined crisis, and the demands for funds and manpower will be endless. Perhaps we should begin to develop the resources of manpower, and knowledge by which basic changes in the system, and basic resource allocation decisions might be based on some degree of rationality, and might slowly provide a foundation for the development of a better total system.

I recognize the need for meeting short-term manpower problems, which are not new, and not difficult to measure. I realize that there are going to be continuing problems of economics, public policy and pedagogy in training the highly skilled technical medically oriented manpower.

\*\*\*At the present time it is difficult for the public to react rationally even to the simple proposal to use fluorides in water supplies to achieve the effect of tripling dental manpower, to say nothing of reducing dental caries by some 65%. To quickly even double our present dental manpower would cost some 1.5M for training alone. To provide a sufficiently large initial manpower pool to assure that each practicing dentist would always have at least one trained assistant would probably cost some \$1.0M for training alone. Annual replacement training costs would probably be some 20% of the above. Fluoridation of public water supplies would probably cost less than \$500,000 a year. Assuming a system capable of meeting all of our present dental needs, and assuming that they were being paid for and met, fluoridation would reduce our dental costs by some \$5,000,000 per year. We might even then have a surplus of dental manpower, except for the suggestion that system capacity generates its own excess for demand.

However, if the health system, and the health problems of the future resemble those which I have suggested, then we are going to need a whole new variety of skills and an entirely new body of knowledge. We shall need "health" oriented managers, planners, statisticians, behavioral scientists, social scientists, publicists, communications experts, etc. to acquire knowledge and develop standards of methodology. We shall need the nutritionist, sociologist, epidemiologist, physician, and administrator to monitor the system and identify the problems, successes or failures. To me, these are the foreseeable critical manpower shortages. To some degree these may need to be "new breeds of cats."

If we use a broad definition of health, and if my problem analysis is valid, then major community or social decisions must be made, of the kind in which individuals must participate. Major problems are no longer those in which an applied unit of technical service may suffice. To a great degree, the individual can no longer live in a "you do it for me" kind of system.

I think we must anticipate a system in which the individual's own responsibility for making wise decisions of his own will be the foundation. He will need informa-

tion, guidance, education and some technical help. Skilled people will need to measure, identify, and define system inadequacies, problems, inequities, and standards and make this effective and usable information for purposes of individual or public decision. The individual may also well need guidance in assuring access to the appropriate element of the medical care sub-system.

I see no way to make any major impact on the demand factor in a \$100 Billion per year health system unless something of a wholesale approach is made to underlying causes, and unless the individual is prepared and equipped to rationally make those decisions that are in his best interest, and will keep the system load to a minimum. If one must drive a car at 100 miles per hour on a slippery road, we should know much more than we do about why it is a "must" and how such behavior might be modified.

I think the kinds of manpower deficits I see as being most critical in the future are clear. I cannot give you numbers. There is nothing particularly unique about their training requirements, other than the necessity for making these kinds of problems interesting and exciting enough to attract the curious and concerned mind.

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## —News From Blue Cross and Blue Shield—



### Utilization Review: A Joint Responsibility

If there is one item on which all sides in the current health financing debate appear to agree, it is on the need to encourage utilization review through the implementation of effective peer review. From Nixon to Kennedy, from HEW to AMA, all parties are pushing for more comprehensive review of medical services by committees of professional peers. Moreover, many practitioners favor more extensive peer review because it could conceivably eliminate retroactive denials under government programs.

An amendment to a bill now before Congress, however, raises serious questions concerning how peer review might best be performed. The Bennett Amendment (Amendment 851 of the Social Security Amendments of 1971) would establish what it calls "Professional Standards Review Organizations." These peer organizations would have responsibility for two very different functions: claims review and peer review.

By "claims review" is meant the process of surveying all claims received to establish a data base for the study of patterns of care, both those of the community and those of the individual practitioner. "Peer review," on the other hand, refers to the examination by physicians of all patterns of care which vary significantly from community norms to determine whether such deviations are or are not medically justifiable.

Clearly, "peer review," as here defined, is the exclusive responsibility of committees of physicians. What seems equally clear to Blue Shield is that "claims review" is properly the responsibility of the carrier.

It is for this reason that the National Association of Blue Shield Plans has made a utilization review program which properly divides these responsibilities a Membership Standard to be met by all Plans bearing the Blue Shield trademark. The Blue Shield model calls for all Plans to implement "claims review" as part of its ongoing claims adjudication process and to establish mechanisms — via liaison with appropriate professional committees — for "peer review."

The Blue Shield Membership Standard encompasses four separate areas: prevention, detection, correction and accountability.

#### PREVENTION

All Blue Shield Plans will now provide evidence that they are attempting to prevent overutilization of services through communications programs directed to both the providers of care and the public.

Such programs might include advertisements, brochures, and meetings explaining the costliness of overutilizing health care services.

#### DETECTION

Blue Shield Plans will now show evidence of an ongoing review of utilization of services which includes the following characteristics:

- A. Routine claims scanning for accuracy and completeness.
- B. Random audit of all claims received.
- C. Statistical reports on high volume providers and subscribers, high volume procedures, high volume programs.
- D. Community patterns-of-care data to be used by peer review committees for purposes of comparison.
- E. Procedures to investigate complaints from providers and subscribers.

#### CORRECTION

Plans will show evidence of having established liaison with the various professional groups for the purpose of implementing review of questionable claims or questionable patterns of care. Plans will also be responsible for insuring that an appeal mechanism is available.

Among Maine M.D.'s, the review function has for years been carried out by the Health Insurance Committee of the Maine Medical Association. Further mechanisms are now emerging through the efforts of the MMA's Peer Review Committee.

#### ACCOUNTABILITY

All Blue Shield Plans must demonstrate the effectiveness of the utilization review program in dollars saved, care trends, and other selected indicators of program effectiveness.

As James D. Knebel, assistant executive vice president of the National Association of Blue Shield Plans, put it in his testimony before the Senate Finance Committee:

"In our opinion most local medical organizations have neither the interest, the expertise, nor the resources to engage productively in *claims* review. Their interest and expertise is certainly important to *peer* review. Interpreting claims data should, to the extent possible, utilize the special knowledge and guidance available only through peer review. But conversely, peer review cannot be effective except in the most limited circumstances of geography and claims



volume without the carrier's analysis and interpretation of its data. . . . We are forced to the conclusion that the establishment of parallel systems with fragmented responsibilities (à la the Bennett Amendment) will be a step backward."

In other words Mr. Knebel is appealing for the sort of *cooperative* utilization review effort between Blue Shield Plan and medical society which Maine has for some time enjoyed and which is now being expanded via the work of the Maine Medical Association's Peer Review Committee.

## News, Notes and Announcements

### American Medical Association to Sponsor 13th National Conference on the Medical Aspects of Sports

The 13th National Conference on the Medical Aspects of Sports, sponsored by the American Medical Association under the auspices of its Committee on the Medical Aspects of Sports, will be held in New Orleans, Louisiana, at the Jung Hotel on November 28, 1971. The Conference is held annually in conjunction with and on the first day of the Clinical Convention of the American Medical Association.

As was true of the previous twelve Conferences, the 13th will cover a wide range of subjects of interest to those serving school and college athletic programs. Included will be forums and discussion sections relating to drugs in sports, protection of the lower extremities, electrolyte and thermal balance, innovations in sports medicine through state medical societies, team physician relationships, crucial health perspectives, and a medical focus on athletics. At the Conference Luncheon, W. Delano Meriwether, M.D., winner of the J. D. Lane Annual Research award for his work at the National Cancer Institute in Baltimore, Maryland; presently, a researcher at the Harvard Medical Unit, Boston; and a latent sprint champion will discuss "MY EXPERIENCES AS A NEOPHYTE TRACK ATHLETE." At the evening session, demonstrations will be staged on taping, equipment fitting, vision, emergency resuscitation and pre-participation examinations.

The Conference is open to key non-medical athletic personnel as well as interested physicians. Those who would like to receive further information concerning the Conference should address the Committee on the Medical Aspects of Sports, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

### Maternal and Child Health Program of the University of California School of Public Health at Berkeley Announces Postgraduate Courses

The Maternal and Child Health Program of the University of California School of Public Health at Berkeley announces postgraduate courses of instruction for pediatricians, obstetricians, and other physicians interested in receiving training in the field of Maternal and Child Health. These programs all lead to the degree of Master of Public Health. Tax-exempt Fellowships are available, consisting of support for the trainee and his dependents, tuition and fees.

Program areas available at the present time include nine-month programs in Maternal and Child Health, Health of School-Age Children and Youth, and Maternal Health and Family Planning. Twenty-one month programs in Care of Handicapped Children, Comprehensive Health Care and Perinatology are available. Fellowships are available for these programs also.

Applications are now being accepted for the group entering September 1972. For information, write to Helen M. Wallace, M.D., School of Public Health, University of California, Berkeley, California 94720.

### American Physicians Art Association

We would like to invite our medical colleagues to become members of our national non-profit organization which is dedicated to furthering art interests of the medical profession; to broadening the physician's knowledge and appreciation of the past and present; to stimulating physician artists to produce works of art in the fields of painting, sculpture, photography, graphic arts, design and creative crafts; to holding a national annual exhibition of physicians' art works; and to stimulating regional art exhibitions of physicians' works at local, state and specialty meetings.

Our art exhibit is held annually in conjunction with the annual meeting of the American Medical Association. The APAA has a membership which extends across the entire United States, Canada and Latin America. Every state in the Union is represented through a Regional Director. It is the hope of the APAA to establish a central photographic archive of its members' art works, to be used for year round press and magazine publicity in the physicians' home towns as well as nationally.

You do not necessarily have to be currently engaged in any art activity to become a member. We also welcome the support of anyone interested in furthering physicians' art in America, as our organization is totally supported by the members and friends of the APAA. The types of membership are:

Life Sponsor Membership	\$200.00
Sponsor Membership	30.00
Regular Membership	15.00
* Associate Membership	5.00

(\* Associate Membership is for Medical students, interns, and residents.)

If you are interested in becoming a member, or if you wish further information, please contact the President of APAA, A. M. Gottlieb, M.D., 3801 Miranda Avenue, Palo Alto, California 94304.

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# The Journal of the Maine Medical Association

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## Review of 100 Elderly Surgical Patients

W. EDWARD JORDAN, JR., M.D.

### INTRODUCTION

Marked improvement in surgical care has occurred in recent years. The therapeutic armamentarium of the surgeon contains potent weapons against those complications most often fatal in the not-too-distant past. Virtually unlimited quantities of blood exist even in the smallest community hospital. Surgical death from shock, due to blood loss, rarely occurs. Electrolyte imbalance is diagnosed early and vigorously managed. Respiratory complications are minimized beginning days before surgery and continuing with the use of antibiotics, tracheobronchial toilet and respirators when necessary, in the post-operative course. Sepsis is prevented or brought under control with intravenous specific antibiotics. Even cardiac arrest seems to be less of a threat than it was ten years ago, the patients being monitored continuously and good oxygenation levels maintained.

In spite of these and other advances in the care of surgical patients, complications do develop and surgical patients die all too frequently. Failure to obtain the desired elimination of surgical morbidity and mortality comes at least in part from an aging patient population which demands the relief which surgery can give and is increasingly able to give with safety.

In order to underline the problems which now face the general surgical patient, I decided to review 100 consecutive patients operated upon by me in the older age groups during the past two years. This paper is concerned not with the patient's disease and its surgical management, but with the patient himself and the outcome of stressful procedures performed on elderly individuals who are ill.

### AGE AND STATISTICS

Age distribution is presented in Table 1 and diagnoses in Table 2.

There were 49 male and 51 female patients. The three most common diagnoses were hernia, cholecystitis and

TABLE 1

Age Distribution		Deaths
60 - 69 - - -	36	0
70 - 79 - - -	39	3
80 - 89 - - -	23	5
90 -	2	1
	100	9

TABLE 2

Primary Diagnosis:			
Cholecystitis	14	Adhesions	2
Duodenal ulcer	6	Ca. of breast	2
Gastric ulcer	2	Uterine prolapse	3
Ca. of colon	8		
Ca. of stomach	1	Ca. of thyroid	1
Hernia	26	Epidermoid ca. of neck	1
		Ca. of pancreas	1
Appendicitis	2	Fractured humerus	1
Uterine Ca.	1	Colonic polyp	1
Lymphosarcoma	1	Prolapse of colostomy	1
Fractured hip	15		
Diverticulitis	1		

cholelithiasis, and fractured hip. They made up more than half of the total group. These are consecutive operative procedures on patients who were 60 years or older. Age is still a factor in surgical outcome as seen by the fact that there were no deaths in patients in the sixth decade, 3 in the seventh, and 5 in the eighth, and 1 in the ninth.

### IATROGENIC STIMULUS

It is interesting to determine how these 100 patients came to reach the medical care system. The vast majority sought medical care with symptoms of the disease in question. Two came as the result of a routine physical examination, three with functional complaints, and two with complaints of some other condition.<sup>1</sup> In a rural community, chronically short of doctors, the number of

TABLE 3

Post-op. course	D i a b e t e s	Low serum albumin	E m p h y s e m a	H y p e r t e n s i o n	Arterio- sclerot- ic heart disease	History of coronary	Elevated B. U. N.	Anesthe- sia over 2 hours
Uncompli- cated 62	14	6	2	8	23	3	5	24
Compli- cated 29	8	7	4	3	7	5	2	14
Died 9	4	6	0	0	5	2	2	5

cases exhibiting direct symptomatology and findings may reflect the small amount of time spent in detecting disease not yet clinically manifested.

#### COMPARISON OF GROUPS

In the Table 3, the entire group was divided into three sub-groups. Sixty-two patients recovered uneventfully from their surgical stress. Twenty-nine had complications but recovered, and nine died. The comparison of pre-operative findings in these three groups is interesting and gives a picture of changing risk status. (a) *Diabetes* — Diabetes today is diagnosed early, carefully managed; preoperatively, intraoperatively, and postoperatively. Mild diabetics, not on insulin preoperatively have insulin added to their I.V.'s. More severe cases taking long acting insulin daily receive one-half of their daily insulin dosage on the morning of surgery and the rest added to their intravenous treatment. Mild imbalance is quickly diagnosed and severe ketosis was not encountered. Urine is monitored continuously for sugar and acetone throughout the postoperative course. It is, therefore, not surprising to find only a small number of diabetics in the complicated group. (b) *Emphysema* — Pulmonary emphysema and chronic bronchitis are subject to rigorous clinical management on the general surgical service today. This begins many days prior to operation with the cessation of cigarette smoking, supervised coughing, postural drainage and chest physiotherapy. Postoperatively, pain relief, tracheobronchial toilet, antibiotics, and the use of respiratory assistance where indicated, are employed. (c) *Hypertension* — Patients with benign essential hypertension are controlled with drugs preoperatively. They are put on relative bed rest and drugs withdrawn several days prior to surgery. Salt intake is restricted. (d) *Arteriosclerotic heart disease and history of coronary occlusion* — Patients are studied for coronary artery disease by the use of electrocardiograms and enzyme studies preoperatively as well as history and physical examinations. No patient

was operated on within three months of a coronary occlusion. Endotracheal intubation, good ventilation combined with light plains of anesthesia and muscle relaxants were utilized. Continual electrocardiographic monitoring was employed intraoperatively and postoperatively.

#### HYPOALBUMINEMIA

The most serious preoperative finding in this study was a depressed serum albumin. This finding, while being most ominous tends to receive the least amount of emphasis. Dietary histories were usually inadequate. Many elderly patients living alone tend to subsist almost entirely on tea and toast. Food preparation is too much trouble and appetite is not good.

It is well recognized that patients suffering from disease states which have depleted their reserves over a long period of time tend to be malnourished. This is often, however, equally true of those going to surgery for urgent conditions, such as fractured hips. Protein reserves are difficult to measure but can be approximated with dietary history, laboratory determinations, and physical examination. Protein nutrition is considerably more critical than fat, and loss of one-quarter of the total body nitrogen may be fatal.<sup>2</sup>

*Whipple's Postulants* present a good picture of what transpires in elderly malnourished individuals.<sup>3</sup>

1. Serum and tissue proteins are in a state of equilibrium.

2. During catabolism, serum proteins are depleted before tissue proteins.

3. Continued catabolism causes serum proteins to be maintained at the expense of tissue proteins.

4. Formation of new tissue requires replacement of serum proteins before tissue proteins.

The recent addition of hyperalimentation to the surgeons armamentarium has provided him with a new and potent weapon against what is probably one of mankind's oldest diseases, malnutrition. The sequence of stress, in-



TABLE 4

Deaths: 9			
<i>Cause of Death:</i>		<i>Contributory cause of Death</i>	
Embolus	0	Ca. of lung	1
Shock	1	Sepsis	2
Cardiac arrest	1	Hepatic failure	1
Uremia	1	Hypoalbuminemia	5
Cardiac failure	3		
Hepatic failure	0		
Coronary	1		
Unknown	1		
Malnutrition	1		

adequate intake, falling serum proteins, accumulation of edema fluid, rising NPN, and death can now frequently be interrupted by vigorous treatment by the intravenous route when the G.I. tract is not functional. This was successfully employed several times in this series of cases.

#### CAUSE OF DEATH

Cause of death and contributory cause of death were carefully classified in the nine patients. One can see by inspecting the table that the old problems of general surgery still remain. However, new problems have come up and tend to exceed the old ones in frequency.

It is not easy to delineate the role which depressed protein nutrition might play in the development of surgical complications. To shed some light on this subject, I arbitrarily selected two complications which I thought more likely in the malnourished individual and one which I thought would be less effected. The result is table 5.

Wound infection depends upon adequacy of sterile technique, the presence of devitalized tissue or blood in the wound at the end of the operation, and the presence of an established infection in the operative area prior to

TABLE 5

	<i>Heart Failure</i>	<i>Renal Failure</i>	<i>Wound Infection</i>
Hypoalbuminemia	3	6	1
19			
Normal			
81	0	1	6

surgery. While immune competence could be reduced by protein malnutrition, I can think of only one patient in this series so seriously depleted. This particular woman had a serum albumin of less than 1 gram prior to death, thus I did not expect wound infection to correlate with depleted protein reserves and indeed it did not.

I suspected that cardiac and renal function would be more directly affected by protein levels and this proved to be the case. At what point this depletion makes itself felt, is not known.<sup>2</sup>

#### CONCLUSIONS

Reduction of morbidity and mortality is still the urgent desire and mission of the general surgeon. It is also, however, necessary to extend surgical relief into the older decades of our population. Success will depend at least in part on the recognition of nutritional inadequacy and the successful clinical management of it when it is found.

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P.O. Box 218, Skowhegan, Maine 04976

## Fall Meeting of the M.M.A. House of Delegates

Sunday, December 5, 1971

St. Joseph Hospital, Bangor, Maine

12:30 P.M. — Registration; 1:00 P.M. — Dinner; 2:00 P.M. — Meeting

10:00 A.M. — Meeting of the Executive Committee

Meeting of the Committee on Nominations

# Pelvic Pneumography

JOHN H. STEEVES, M.D.\*

Pelvic pneumography is a radiographic procedure which may be performed with no more difficulty than a routine barium study. Pelvic pneumography not only supplements clinical findings and other radiographic studies but sometimes may be the one examination which is diagnostic.

Pelvic pneumography was introduced approximately 60 years ago. The examination has not received routine use because in many cases, diagnosis of disease in the pelvis can be made accurately on a clinical or laboratory basis. Some clinicians feel that the operative procedure utilized in performing the examination may be somewhat dangerous to the patient and some clinicians are unaware of this examination and its availability in most x-ray departments. Most gynecologists quickly admit that in many cases the ovaries are not palpable by clinical examination and it is generally assumed that if they are not palpable they are not enlarged.

The type of patients generally referred to the x-ray department have a bizarre or complicated clinical history which does not correlate well with the physical findings at the time of examination.

Obese patients or patients with thick abdominal walls from thick abdominal muscles with varying subjective symptoms usually head the list. There is usually an intermixture of bowel complaints, gynecological complaints and not too infrequently, some urinary symptoms as well. Most of the patients seen are between 20 and 40 years of age. Sterility is also a common complaint in a number of patients. Abdominal pain or distress is usually the presenting complaint in the older patients.

Pelvic pneumography has aided in the diagnosis in cases of congenital disease, cystic disease, neoplasm and tubal pregnancy. It is felt that pelvic pneumography is of help in evaluating this type of patient and is certainly a useful adjunctive to the routine bowel and kidney studies as well as hysterosalpingography. Pelvic pneumography is recommended as one of the preliminary examinations following adequate history and physical by a clinician who is aggressively interested in determining the source of the patient's illness.

Patients referred to the x-ray department are usually inpatients, however, this procedure may be done on an outpatient basis. It is recommended that the examination be performed following adequate bowel preparation and certainly if possible, before any barium studies of the upper or lower intestinal tract.

We usually prefer to administer 50 mgs., of Promethazine Hydrochloride 20 minutes to one-half hour prior to the examination and have the patient void just prior to

examination. The patient is then placed on the x-ray table, clothed in regular hospital apparel and covered by a draped sheet. A routine KUB study of the abdomen is performed or if desired a 10 x 12 film may be used for visualization of the pelvic area.

The patient is visited prior to the examination by the radiologist and a short history of the problems obtained directly from the patient although usually the referring clinician has already briefed the radiologist with the patient's difficulties. This not only enlightens the radiologist as to the nature of the disease but also reassures a doctor-patient relationship prior to the examination.

## EQUIPMENT NECESSARY FOR PELVIC PNEUMOGRAPHY

1. Sterile gloves
2. 4 x 4 swabs
3. Alcohol sponges
4. Tincture of Zephiran®
5. Two sterile towels
6. 2½ cc syringe with a 20 gauge 1½" needle
7. Local anesthetic
8. #18 gauge spinal needle with a stylet
9. 30" venotube
10. 50 cc syringe
11. Tank of Nitrous Oxide - U.S.P. - E Type Cylinder with a needle valve flow regulator

## PREPARATION OF THE PATIENT

The patient is placed on the table so that a 45° Trendelenburg position may be obtained. The table should be equipped either with a harness or shoulder supports. With the patient in supine position, the anterior abdominal wall is prepped from the umbilicus to the pubic symphysis with Tincture of Zephiran and draped with two sterile towels, one over the symphysis and one over the upper abdomen. Utilizing a 2½ cc syringe and a 20 gauge 1½" needle, local anesthetic is injected into the anterior abdominal wall approximately midway between the umbilicus and symphysis. This is injected slightly to either side of the midline. Unless the patient is unusually asthenic, the needle is inserted to its full length and it is directed approximately at a 30° angle toward the pubis.

Following this maneuver, finger pressure is applied at the injection site. This allows the patient to contract the abdominal muscles prior to insertion of the spinal needle, and adds to the patient's comfort. After adequate delay for the local anesthetic to be effective, a spinal needle with a stylet is inserted at the injection site and directed approximately 30° toward the pubis. Insertion of the needle usually produces a little pain in the anterior abdominal wall, and some discomfort when the peritoneum is perforated. This point is important to note as the success of the examination depends on the fact that the

\*Radiologist, Redington-Fairview General Hospital, Skowhegan, Maine 04976.



Fig. A1

needle point has penetrated the peritoneal cavity. Upon removal of the stylet, plastic tubing is attached to the needle and then a 50 cc syringe in turn is attached to the plastic tubing; this allows for more maneuverability.

An attempt is made to aspirate. If the needle had pene-

trated a vessel, the result is usually obvious. A vessel is rarely entered if the needle is inserted as described above. It has not been my experience during the past six years to enter a vessel at the time of examination.

The most common organs entered are the gastrointes-





Fig. A2

tinal tract and bladder and the latter rarely occurs. It was my experience to enter the bladder only once during numerous examinations over a six year interval. Aspiration of urine will usually follow any penetration of the bladder.

Following proper placement of the needle, approximately 5 cc of Nitrous Oxide is introduced. If the needle is in the extraperitoneal cavity, usually you will obtain a return of at least a part of gas. If the needle is correctly placed in the peritoneal cavity, gas diffuses quickly over

the intestines and you will not be able to obtain a return of gas. After correct positioning of the needle has been established, gas can be introduced in 50 cc lots into the peritoneal cavity for a total of 1,000 cc. This may be quickly and efficiently done by utilizing a 50 cc syringe and a needle control valve as described above.

The patient usually complains of discomfort anteriorly beneath the lower ribs and occasionally later in the injection, they complain of some abdominal distention. They occasionally have shoulder pain, particularly in the



Fig. A3

tip of the right shoulder. After the proper amount of gas has been introduced into the peritoneal cavity, the needle is removed.

Patient is then placed in prone position and the shoulders are placed against the shoulder rests on the table. The table is then tilted cephalad to a 45° angle. The slight delay in positioning amounts to two to five minutes and this allows time for the Nitrous Oxide to enter the pelvic area.

Radiographic films are taken in this position. A 10 x 12 film is centered at the gluteal fold. The tube is positioned at 0° straight down, exposure is made at 200 MA, 3/10 second, 75 KV for an average patient. On the second film, the patient is rotated anterior oblique 15°, tube is tilted 12° caudad and a 10 x 12 film is again centered at the gluteal fold. Exposure is made using 200 MA, 3/10

seconds, 80 KV for an average patient. For the third film, the patient is rotated to the opposite anterior oblique 15° and the tube is tilted 12° caudad.

Studies are examined following the processing. We utilize a 90 second processor which results in little delay. If the studies are suboptimal either from positioning or from technique, they are repeated. The tube is angled slightly more or less to better visualize the ovaries or the uterus.

A 40 inch tube distance results in some magnification. An ovary which measures 3½ cm by slightly over 4 cm is considered within the upper limits of normal. The normal uterus is found to measure 7 cm or less on the film.

The patient is then returned to the ward upon completion of the examination. If the examination was done on an outpatient basis, the patient is observed in the x-ray



Fig. B

department for 30 to 40 minutes following the examination. If preoperative medication was administered, it is recommended that the patient refrain from driving.

Patients may have some abdominal discomfort following the examination which may last one to two hours. This usually is minimal and decreases very rapidly. Patients who have the most discomfort are the ones who inadvertently have air injected extraperitoneally, which

causes discomfort at the time of the injection and prolonged discomfort that may last up to 12 hours. It is important to differentiate between peritoneal and extraperitoneal air when evaluating the radiographs. If a large amount of Nitrous Oxide is injected into the extraperitoneal space, evaluation of the pelvic organs by proper placement of peritoneal air may be difficult at the time. It is better to reschedule the examination at a later time.





Fig. C

LEGEND FOR PELVIC ANATOMY

- |   |                     |
|---|---------------------|
| 1. Rectum                                     | 5. Fallopian Tube   |
| 2. Sigmoid colon                              | 6. Ovary            |
| 3. Cul-de-sac of Douglas (Rectouterine pouch) | 7. Broad Ligament   |
| 4. Infundibulopelvic Ligament                 | 8. Ovarian Ligament |
|   | 9. Round Ligament   |



Fig. D



Fig. E

10. Uterine Fundus
11. Intergluteal Crease
12. Urinary Bladder
13. Uterovesical Pouch

#### THE FOLLOWING ARE CASES FROM OUR DEPARTMENT

Case 1. An 18-year-old girl was admitted because of abdominal pain which started several days prior and radiated to the right upper abdomen. The amount of pain was described as having decreased since her last menstrual period which she had completed just prior to the attack. The pain began on the 11th day of the cycle. Pelvic pneumogram (X-Ray Film #A—3 views) in this case was normal. Pathological diagnosis was Acute Appendicitis.

Case. 2. This 23-year-old white female was admitted to the hospital because of vaginal bleeding. Physical examination revealed a thick septum that completely divided the vagina into two separate cavities. Examination of the upper aspect of each vaginal cavity revealed what appeared to be an entirely normal cervix. On bimanual examination, two uteri were questioned. The adnexal structures appeared normal. The number of ovarian structures could not be determined. Pelvic pneumogram (X-Ray Film #B—1 view) confirmed two uteri (uterus didelphis). Patient underwent corrective surgery.

Case 3. A 33-year-old mother of two children was admitted because of left lower quadrant pain that started three to four days prior to admission. She had no history of missed periods but had a history of similar episodes in the past. Examination revealed a mass palpable in the left adnexa. Pelvic pneumography (X-Ray Film #C—1 view) demonstrated this mass and the diagnosis of cystic disease of the left ovary was made. Pathological diagnosis confirmed this and was reported as Hemorrhagic Corpus Luteum Cyst and Follicular Cysts of the left ovary.

Case 4. A 28-year-old mother was admitted because of abdominal pain having been referred from an outside hospital. Pelvic pneumography (X-Ray Film #D—1 view) demonstrated an enlarged uterus. Follow up examinations included an IVP and Barium Enema, both of which were considered within normal limits. Final diagnosis following hysterectomy was Myometrial Hyperplasia. The weight of the uterus was 155 grams.

Case 5. A 28-year-old female was admitted with history of pelvic pain. There had been no vaginal bleeding or discharge. She previously had had a hysterectomy. Physical examination revealed a tender lower abdomen on the left side. Pelvic pneumogram, (X-Ray Film #E—1 view) demonstrated absence of the uterus, and irregularity of the left ovary compatible with cystic disease. Patient was followed clinically with interval improvement and disappearance of the mass.



# Unusual Location of Carcinoid

H. CARL AMREIN, M.D.

This case was chosen to report, not because carcinoid is so unusual, but because location of carcinoid in the duodenal tract is rather uncommon and it was felt it might be of some interest to the profession to report a carcinoid found in the duodenum.

Carcinoid tumors are reportedly found throughout the entire gastrointestinal tract except the esophagus, the most common place being in the appendix and the small bowel. Carcinoid tumors of the intestinal tract are usually small submucosal nodules, or even simply focal areas of submucosal thickening. Regenerated tumors are firm, well circumscribed and yellow-tan in color. Frequently they are multiple. The overlying mucosa is intact and mucosal ulceration is uncommon.

In 1964, Sanders and Axtell reported 2500 cases of gastrointestinal carcinoid. The greatest incidence of carcinoid tumor was in the appendix and 64 carcinoids were duodenal. Three-fourths of these were symptomatic with duodenal obstruction, common bile duct obstruction or associated duodenal ulcer.

From 1932 to 1967, at a New York hospital, there were 64 primary duodenal tumors reported, 35 benign and 29 malignant. Of 14 benign tumors found, the bulb carcinoid was the most frequent, numbering 5, with only one carcinoid in the other three divisions of the duodenum. Two of these patients with carcinoid tumors had carcinoid symptoms; i.e., flushing diarrhea. In this series only one carcinoid was found in the third division of the duodenum, the most common site being in the duodenal bulb. Another review of the incidence and distribution of carcinoid reports distribution as follows: appendix 46%, jejunum and ileum 30%, colon and rectum 19%, stomach 3%, Meckel's diverticulum duodenum 1.5%, gallbladder and pancreas less than 1%. From 1938 to 1957, 131 tumors of the duodenum were encountered at the Mayo Clinic, but only 4 of these were carcinoid. Another large survey reported in 1964 that out of 48 cases the first portion of the duodenum was the site of the tumor in 40 cases, and the second portion of the duodenum in 7 cases, third portion only 1. It was also reported in this paper that lesions in the second portion are usually symptomatic and are associated with symptoms of biliary obstruction. In view of the few cases reported in the second portion of the duodenum, it was felt that the following case should be reported.

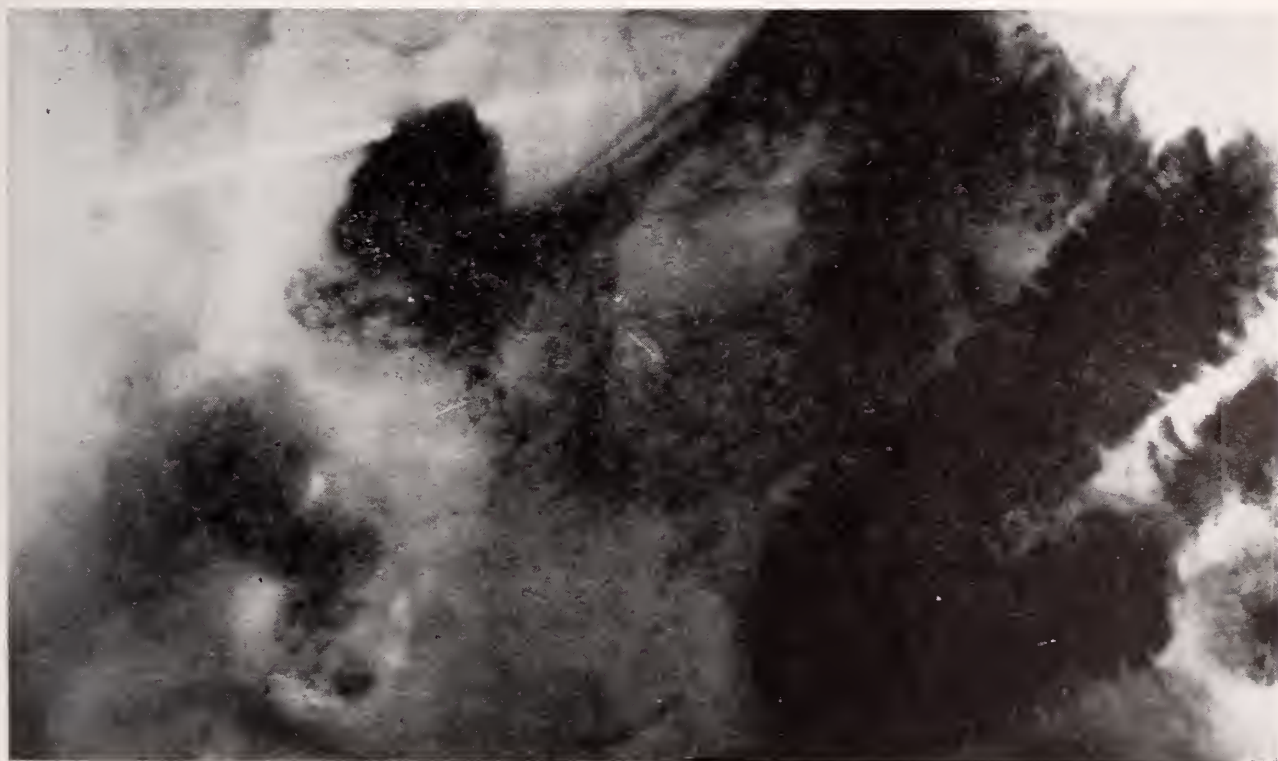
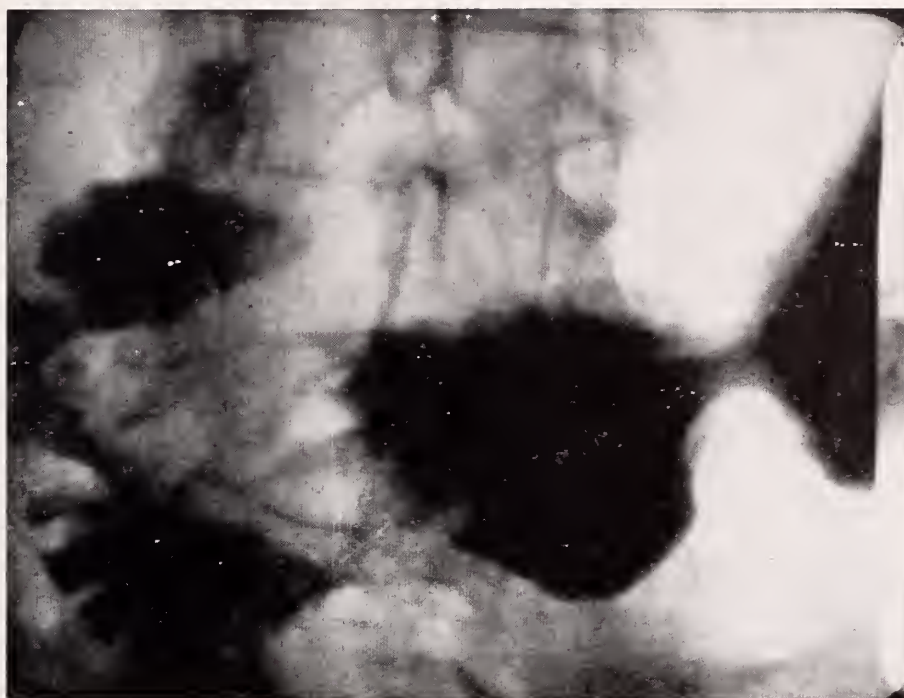
## CASE REPORT

In January of 1971, this patient presented herself with chief complaint of intermittent diarrhea which did not seem to respond to medication, and also mild upper gastric pain which seemed to radiate through to the right back. Diarrhea had started some eight weeks previous and did not seem to respond to any type of treatment at this time. The patient was examined radiographically by barium enema. Barium enema was reported as having minimal deformity of the cecum and some diverticulosis.

Also seen on the flat plate were questionable gallstones. Her gallbladder did not fill and was not delineated at the time of fluoroscopy. Her upper GI tract was investigated. The stomach and duodenal bulb were filled and appeared normal with normal spill into the proximal small bowel loops. There was a small hiatus hernia noted, but there was no evidence of defect at this time in her duodenum. The remainder of this patient's studies at this time were well within normal limits. Her electrocardiogram was normal; CBC and urine were within normal limits. The patient did not wish to be explored at this time and she was discharged and told to return at a later date. At the time of discharge on January 26, until March 11, the patient seemed to recover from her diarrhea; her bowel habits were more normal, but she now was having recurrent right upper quadrant pain in attacks that radiated through to her back and finally in April the pain and attacks became so severe that she consented to exploratory surgery on May 4. On admission her hemoglobin was 80, hematocrit was 40, white blood count was 8,900, polys were 73, stabs were 2, and lymphs were 25. Urine was reported as Ph 5, specific gravity 1.020, sugar negative, albumin negative, acetone negative, and stool for occult blood was negative. On May 4, under general anesthesia, the patient underwent exploratory surgery through a right upper paramedian incision. The gallbladder was found to be enmeshed in an abundance of adhesions. On preliminary examination, the gallbladder was found to contain many calculi; the cystic duct was widely dilated as was the common duct. The patient had given no history of jaundice and no observation of jaundice had been seen in this patient, but on the basis of the widely dilated common duct it was decided to explore. After the gallbladder had been removed, the common duct was explored and during the exploration the tumor was palpable within the second portion of the duodenum. At this point, it was felt that the tumor probably was a stone in the ampulla and the duodenum was opened and it was discovered that there was a tumor medial and slightly distal to the ampulla of Vater. The tumor seemed to be easily moveable within the mucosa and it was excised widely, taking a small amount of muscularis with it. It was thought at this time that it probably was a leiomyoma. The defect was repaired, a T-tube was inserted into the common duct and the patient was closed. Immediately upon finishing the surgery, her previous x-ray films of the area were reviewed. The patient made uneventful recovery from this surgery. She was given one pint of blood postoperatively. On a complete review of her x-rays postoperatively, the tumor was visualized on her x-ray studies, but not reported. Postoperative cholangiograms showed no evidence of calculus left behind and she was discharged ten days following her surgery. The patient was advised that she should return in a period of three months for a follow-up upper GI series.

The patient has been seen since her discharge in the office and she is feeling well, has had no complaints referable to her surgery. She has had no further bouts of diarrhea and she has had no complaints of pain in her right upper quadrant. Her blood picture has been satisfactory and she apparently has been in good health. She is to be reviewed sometime in September for possible recurrence of her tumor. Her pathological report is as follows:

Name: V.M.D.	Age: 65	Specimen No. S-71-379
Operation Date: 5-4-71	Date Reported: 5-5-71	Date Submitted: 5-4-71
Surgeon: H. C. Amrein, M.D.		
Specimen: Gallbladder and tumor from duodenum second portion		
Preoperative Diagnosis: Cholecystitis		
Postoperative Diagnosis: Cholelithiasis and duodenal polyp		



Operation Performed: Cholecystectomy, common duct exploration, duodenotomy and polypectomy  
Present Illness:

#### GROSS DESCRIPTION

The specimen consists of a gallbladder and a sessile tumor from the duodenum. The gallbladder measures 7.5 x 3 x 3 cm. It is hard and obviously contains large stones. The wall of the gallbladder is thickened and near the neck of the gallbladder, there is a ridge of calcified tissue. There is another area of calcification with ridging just below the fundus which into each of the thus formed three compartments, there are stones with polished butting edges. They completely fill the gallbladder so that it is even difficult to open. The largest stone in the middle section measures 2.7 x 2.7 x 2.2 cm. At each end it has a polished surface — at one end concave, at the other almost straight. The next stone measures 2 cm. in maximum diameter and the third stone again measures 2 cm. in maximum diameter. Transsections of the stones reveal a matrix consisting largely of cholesterol although in one of the two smaller stones, there is a portion which contains a greater amount of bile pigment at one end. At the end of the other, there is a large admixture on the outside of calcium carbonate. The normal mucosal pattern is completely gone and there are areas that are roughened and reddened. Sections through these are taken.<sup>2</sup>

With the gallbladder, there is a portion of mucosa from the intestinal tract, apparently the small intestine said to be the duodenum. In the center and near one end of the mucosal strip, there is an elevation of tumor tissue which extends from the stretched overlying mucosa to the underlying submucosa. The tumor on

section is seen to be well demarcated, very slightly lobulated and non-infiltrating.<sup>1</sup>

#### MICROSCOPIC DIAGNOSIS

1. Chronic cholecystitis with focal calcification of walls.
2. Cholelithiasis (3 large mixed stones — largely cholesterol).
3. Carcinoid of duodenum with extension into muscularis.

#### SUMMARY

This has been the report of carcinoid of the second portion of the duodenum in a 65-year-old female, which was found under exploratory operation for biliary tract disease.

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# A Clinical Pathological Brief

RICHARD C. TAYLOR, M.D.\*

C. C.: Abdominal cramps, vomiting and weakness  
 P. I.: "Roloids" for acid indigestion — many years  
 Weakness, fatigue and anoxia — December  
 Vomiting daily for one week with abdominal cramps and no bowel movement for that week — July  
 Abdominal cramps — September 1  
 Vomiting daily — September 2 to September 9  
 Loss of consciousness (brief) and urinary incontinence on day of admission — September 9  
 Weight loss of 19 pounds in 8½ months  
 P. E.: Well nourished, listless 64-year-old white female admitted on stretcher.  
 Blood Pressure — 0/0      Radial pulse — 0  
 Respiration — 12 per minute  
 Temperature — 96.3 F.  
 Skin: Cold and dry. No jaundice or petechiae  
 Neck: No masses or stiffness  
 Chest: Apical pulse 116 per minute  
       Decreased resonance, slight of right base  
 Abdomen: No masses or tenderness  
 Rectal Examination: Yellow feces on glove  
 Genitalia: Normal female. Pelvic examination not done  
 Neurological Examination: No abnormalities

## X-RAY EXAMINATION:

9/10 Chest: Left cardiac border — prominent — compatible with cardiomegaly. Infiltrate in right mid lung field — compatible with inflammatory disease.  
 9/11 Chest: Changes suggestive of pulmonary edema and consolidation process in left lower lung field — underlying pneumonitis suspected.  
 9/11 Abdomen: Three views — a ground glass appearance suggestive of fluid. G. I. tract relatively free of gas and feces.

## LABORATORY EXAMINATIONS:

### Hematology:

9/9 — Hct. — 63 mm. %      Hb — 20 grams %  
       WBC — 25,000 mm.<sup>3</sup>  
 9/13 — Hct. — 41 mm. %      Hb — 13.7 grams %  
       WBC — 26,300 mm.<sup>3</sup>

## Blood Chemistry:

### Blood Sugar (mg. percent):

9/9 — 8:30 p.m. — 45	9/9 — 9:30 p.m. — 202
9/10 — 260	9/11 — 110
9/12 — 225	9/13 — 124
9/14 — 120	

### B. U. N. (mg. percent):

9/10 — 60  
 9/11 — 200  
 9/13 — 155

### Serum Electrolytes (meq/l):

9/10 Na — 132	K — 3.4	Cl — 97	CO <sub>2</sub> — 20
9/11 Na — 130	K — 3.4	Cl — 90	CO <sub>2</sub> — 18

### Serum Bilirubin (mg. percent):

9/11 T — 8	D — 3.5	I — 4.5
9/13 T — 2.9	D — 1.86	I — 1.04

### Enzymes:

#### Serum amylase:

9/10 — 120 units (60 to 160 units)  
 9/11 — 160 units (60 to 160 units)

#### Serum alkaline phosphate:

9/11 — 25.8 Bodansky Units  
 9/13 — 20.1 Bodansky Units

### S. G. O. T.:

9/13 — 81 units (5-40 units)

## CLINICAL COURSE:

Three hours following administration of 1,000 ml. of 5 percent Dextrose in water and oxygen therapy the blood pressure rose to 160/92. Insulin therapy for apparent diabetes mellitus was given.

Over the next five days intravenous fluid therapy, of Dextrose and Saline with Beclysyl and Levophed® added on occasion, was administered. The blood pressure varied from 0/0 to 126/90. Digoxin and Aminophylline were of temporary help only.

On the fourth hospital day, the patient vomited a moderate amount of green fluid at 12:30 a.m., a larger amount of pink fluid at 3 a.m., 300 ml. of brown fluid at 9 a.m. and 400 ml. of similar fluid at 2:30 p.m. During the evening, she vomited 250 ml. of coffee ground material.

On the fifth hospital day, the patient was clearly jaundiced clinically.

On the sixth hospital day in the evening, the patient vomited copious amounts of brown fluid through the Levine tube. Ten minutes later — B. P. — 0/0, P — 0, and R — 2. In spite of 1,000 ml. of Normalsal with Levophed added, no elevation of blood pressure occurred and the patient was pronounced dead.

An autopsy was performed. Turn to page 273 for the findings.

\*Redington-Fairview General Hospital, Skowhegan, Maine 04976.

## Pilonidal Cyst

CARLTON E. SWETT, M.D., F.A.C.S.

Pilonidal cyst is a common condition seen by physicians engaged in every type of medical practice. There still is considerable difference of opinion as to its developmental history and etiology, and there are several types of treatment currently being used. This disease occurs primarily in the younger age group. Of the last fifty cases admitted to the Redington-Fairview General Hospital for surgical treatment, the average age was 22 years, and they were about equally distributed between the sexes. Because of its frequency and the age group that it affects, it is important that this condition be as clearly understood as possible, so that the disability, morbidity and recurrence rate may be reduced to a minimum.

Some medical personnel still feel that pilonidal cyst is a congenital lesion. This is probably a result of its location and content of hair. Studies of the developmental history and the pathology of the condition indicate that it is unquestionably an acquired lesion. Pathologically, the cystic area is lined by a granulation tissue, containing a variety of inflammatory cells. There are foreign body giant cells and histiocytes present as well. The cyst usually contains a varying number of hairs, from which the lesion derives its name. However, there are never any hair follicles in the wall of the cyst and if one examines the hairs with a microscope, one will find that they are hairs which have been previously cut. Therefore, these hairs must have migrated to this area from some other part of the body. Further investigation will indicate that these are principally from the scalp area and have been cut during trimming of the hair. Following a haircut, the hairs fall to the back, and the contour and muscular action of the back acts as a funnel which directs these hairs to the lower back and into the intergluteal fold. By the time they reach this area, they are pretty much aligned and, due to the motion in this area, the hairs can burrow into the skin. Persons with pilonidal cyst disease are those with stiffer hair than those who don't have the problem. It is, therefore, very important that persons with susceptibility to this problem should shampoo and shower thoroughly following a haircut and they should be inspected frequently and any hairs entering the pits in this area should be carefully removed. Shaving in the low back area should be avoided.

A patient requesting treatment for pilonidal cyst disease usually presents in one of two ways. They either have an acute abscessed condition, or a chronic irritation due to the slight inflammation associated with the quiescent phase of the disease. Acute pilonidal abscess must be treated by adequate drainage. I prefer to do this under general anesthesia. The incision should be kept in the midline, for reasons that will be elaborated later, and the incision should be extended to the full extent of the abscessed cavity, superiorly and inferiorly. The lesion will heal more rapidly if the granulation tissue lining the

abscess cavity is carefully debrided away, either with a curette or a dry sponge, and then the cavity should be packed with plain dry gauze. The packs are then changed every two or three days until the lesion heals. Antibiotics are usually not required.

The patient entering the hospital for definitive surgery should be free of any evidence of acute inflammation. The usual preoperative tests are carried out. Anesthesia of choice is endotracheal with the patient placed on his abdomen. Spinal anesthesia should be avoided because of the inflammation associated with this condition. With the patient on his abdomen, the area is prepped in a suitable fashion for surgery and the buttocks gently retracted with wide tape. The surgical procedures which may be chosen at this time are excision and primary closure, marsupialization, or incision, debridement and packing. Marsupialization usually involves considerably more morbidity and a more lengthy time of disability.

I prefer excision and primary closure and I would like to describe this technique in detail. The extent of the excision is carefully marked out with a suitable marking pencil. It is important that symmetry be maintained in order to achieve a good closure and the lines of the incision on each side are, therefore, of equal distance from the midline. If any previous incisions for drainage have been midline, it will keep the width of the excision to a minimum. The extent of the incision can be determined by introducing a small probe into the upper most and lower most pit. The upper and lower end of the incision should be well above the obvious extent of the cyst. Injection of dye into the cyst is not recommended or necessary. When making the skin incision, keep the skin edges sharp and avoid beveling of the skin edge. The line of the incision is then carried through the subcutaneous tissue to the presacral fascia and the lesion excised. There is no need for blunt dissection, and the entire dissection is carried out with a scalpel. Following excision, a pack is placed in the wound with gentle pressure for three to five minutes. This will control most of the bleeding. Any bleeding points found upon removing the pack can be secured with fine plain catgut ties. Electrocautery is to be avoided and permanent type sutures are contraindicated. The wound is then closed with stay sutures of medium-sized, braided, stainless steel. The stay sutures are introduced in such a fashion that they are tied on each side of the wound and not across the midline. This is accomplished by introducing the suture approximately 1½ inches back from the skin edge and the suture enters the wound at the fascial level. It re-enters the wound on the opposite side at the same level and re-enters the wound just below the skin edge. The suture is then carried across the wound, re-entering

*Continued on Page 273*

the wound on the same side as it was introduced and exits through the skin approximately one-half inch medial to where it entered. After all of the sutures have been placed, they are tied over small gauze rolls. Prior to approximating the wound edges, the wound is irrigated with a small amount of saline and all clots and debris removed. Drains are to be avoided. Following the tying of the stay sutures, the skin is closed with a running subcuticular monofilament fine wire suture. This is introduced into the skin approximately one inch from the end of the wound and enters the wound at one end. It is then run in a subcuticular fashion, being checked every three or four bites to make sure that it will run freely. When one reaches the other end of the wound, the suture is then passed under the skin and exits about one inch from the end of the wound. Again the suture is checked so that it will slide back and forth freely. A single sponge is then placed over the wound and the pullout subcuticular wire is tied over this. More dressing is applied over this, and this is secured to the wound by tying the ends of the stay sutures over it. This makes a secure bandage which cannot be displaced. A small amount of tape may be placed to prevent the wires from catching on bedclothes and clothing. A broad spectrum, antibiotic is ordered for the first three postoperative days. The patient is allowed up on the first postoperative day. He may sit in a firm

dinette-type chair or walk about. The patients are advised to avoid soiling of the bandage when cleansing the perineum after stool. Discharge from the hospital is on the second or third postoperative day, and the patient is followed in the office. On the seventh or eighth postoperative day, the sutures can be removed. The patient is advised to rest for another week and may return to work on the fourteenth postoperative day.

I have found this technique to be highly successful, and to this date have experienced no recurrences. It is very important, however, that definitive surgery be delayed until all evidence of acute inflammation has subsided, and that details of the technique be carefully observed.

#### SUMMARY

The etiology and treatment of pilonidal disease has been discussed. With a better understanding of the etiology, the physician can best advise his patients with a tendency of pilonidal disease as to the preventive measures he may use. This will allow the patient to delay definitive surgery to the most convenient time. Definitive surgery has been discussed in detail, and, if followed carefully, will reduce the morbidity, disability, and recurrence rate associated with pilonidal disease.

21 Fairview Avenue, Skowhegan, Maine 04976

#### A CLINICAL PATHOLOGICAL BRIEF — *Continued from Page 271*



#### Anatomic Pathologic Diagnosis:

1. Diaphragmatic hernia with incarceration and strangulation of the upper one-half of the stomach.
2. Hypertrophy of lower end of esophagus and pyloric sphincter.
3. Acute ascending choledochitis, severe, and intra-hepatic cholangitis.
4. Aspiration pneumonia.
5. Atelectasis of lower lobes of both lungs, especially right.
6. Acute toxic nephrosis of kidneys.



# Pathological Rupture of the Spleen in Acute Leukemia

ROBERT W. KASCHUB, JR., M.D.\*

Splenic rupture in the course of leukemia represents a serious, immediately life-threatening complication, which, however, is fortunately rare. Stites and Ultman<sup>1</sup> reviewed the literature in 1966 and found a total of 31 cases. Of these, 23 were sufficiently documented to be classified as spontaneous. Since 1966, only three additional cases have been reported.<sup>2,3,21</sup> In the current case, the phrase "pathological rupture" has been chosen, in the manner of Walton,<sup>4</sup> to avoid debate as to whether it represents a true spontaneous rupture.

## CASE REPORT

L.G., a 27-year-old white male, with no significant past medical history, was admitted to Mary Hitchcock Memorial Hospital on April 20, 1971, with a one month history of progressive fatigue, dyspnea on exertion, and easy bruising; a one week history of slow but continuous epistaxis; and a petechial rash of one day's duration. Physical exam revealed only the above-mentioned petechiae and a subconjunctival hemorrhage. There was no significant lymphadenopathy noted, nor was there splenomegaly. On admission his hematocrit was 23, platelets 6,000, and white blood cell count 47,000 with 88% blast forms. A bone marrow aspirate confirmed the diagnosis of acute lymphocytic leukemia. Initial therapy consisted of infusion of platelet rich plasma.

On the morning of the 22nd of April, he suddenly became nauseated, and complained of a diffuse crampy abdominal pain. There were no localizing signs in the abdomen, but the patient was noted to be diaphoretic and hypotensive (90 systolic). Over that day, he developed epigastric pain and mild abdominal bloating, and the nausea increased. The pain was increased on respiration and movement. An abdominal series done on the 22nd showed slight splenomegaly, but no other abnormality. The psoas shadows were not obliterated. He was given supportive therapy in the form of blood and platelet transfusions. His hemoglobin, initially unchanged from admission, dropped in a period of 48 hours from 7.9 to 6.8 grams in spite of four units of blood. On the 23rd of April, he developed fever to 102 degrees, as well as a left pleural effusion, and pleuro-pericardial rub. He was begun on antibiotic therapy with Gentamicin, Carbenicillin, and Methicillin. Subsequent cultures of blood and sputum were negative. By the 24th of April, his abdominal complaints had subsided and his vital signs were stable. He was begun on chemotherapy with Vincristine and Prednisone®.

On April 27th, he was transferred to the Veterans Administration Hospital, White River Junction, Vermont, at which time his only complaints were diffuse weakness and dyspnea on exertion. Physical examination was negative, save for a temperature of 102 degrees, petechiae on his legs, and a subconjunctival and fundal hemorrhage, both on the left. The antibiotic and antileukemic therapies begun at Mary Hitchcock were continued, and he continued to receive blood and platelet transfusions. By the seventh of May, his white blood cell count had fallen to approximately 1,500, still with 95 to 97% lymphocytic series. His requirement for platelets and red blood cells, however, had decreased. The hemoglobin was 11.9 grams and the platelets had risen spontaneously to 60,000.

On the 7th of May, he quite suddenly developed a confluent macular eruption which subsequently became petechial. On the morning of the 8th, he developed epigastric pain, nausea, and vomiting. Physical examination revealed slight diaphoresis, a pulse of 90, and mild epigastric tenderness. There was no splenomegaly noted. Although both vomitus and stool were negative for occult blood, his hemoglobin was 9.7 grams, representing a 2 gram drop from the previous day. His platelets were 72,000. He received two units of blood during the day. By 4:00 p.m., the abdominal pain had become more severe and generalized, although still centered in the epigastrium. He noted that the pain was increased by movement, respiration, voiding, passing flatus, or vomiting. It did not radiate to his chest or shoulders. Physical examination revealed diaphoresis, cold, clammy extremities, a blood pressure of 90 systolic, and a pulse of 86. The abdomen was distended. There was marked pain elicited on rocking the abdomen and tenderness and guarding throughout, with rebound and referred rebound to the epigastrium. Stool and vomitus were still negative for occult blood, yet a repeat hemoglobin was 9.0 grams. The platelets had dropped to 36,000. An abdominal series suggested free peritoneal fluid. There was no free air, distended small bowel loops, or abnormal masses seen. The spleen was not visualized.

On the night of the eighth, he showed progressive abdominal distention, fluid wave, shifting dullness, and he remained in a shock syndrome with oliguria, tachycardia as high as 170, and hypotension to 80 systolic. In spite of infusion of 5,000 cc's. of red blood cells and platelet rich plasma, by the morning of the 9th his hemoglobin had dropped further to 7.9 grams. The platelets were 58,000. A repeat abdominal series showed no change. By 4:00 p.m. on the 9th, he had received an additional 2,500 cc's. of fresh donor blood. His hemoglobin had risen to 9.7, platelets were 98,000. There was a transient improvement in his vital signs. That night, however, he showed further clinical deterioration and he received an additional 2000 cc's of packed cells.

On the morning of May 10th, the hemoglobin was 8.5 grams, platelet count was 92,000. An abdominal series was repeated with a Gastrografin® swallow. This revealed a 17½ by 20 centimeter mass in the left upper quadrant. The stomach was displaced medially to such a degree that there was complete obstruction at the gastroesophageal junction. Laparotomy and splenectomy were performed using five units of fresh donor blood intraoperatively. Operative findings were 6,000 cc's. of intraperitoneal blood and a 235 gram spleen with a rent in the lateral surface and subcapsular hematoma. Subsequent microscopic examination revealed diffuse infiltration with leukemic cells. There was no evidence of splenic infarction.

The postoperative course was benign with the exception of a transient fever to 102 degrees on the first postoperative day with consolidation in the right lower lobe. This cleared without antibiotic therapy. In addition, a culture of the urine done two days postoperatively showed a large number of E. Coli. He did not require further blood or platelet transfusions. Further questioning revealed that he had done 25 sit-ups on the day preceding the abdominal pain. A bone marrow done on the second postoperative day was hypocellular but continued to show 50% blasts forms. Therapy with Vincristine and Prednisone was continued until his discharge on May 26th, 1971. At this time, he was afebrile with a hemoglobin of 10.4 grams, white blood cell count of 8,200, of which 35% were of the granulocytic series, and a platelet count of 292,000.

Although well on discharge, he was readmitted on the second of June with high fever, malaise and E. Coli in his urine. This was treated successfully with Gantrisin® but a repeat bone mar-

\*Veterans Administration Center, White River Jct., Vermont and Redington-Fairview Hospital, Skowhegan, Maine 04976. Address Requests for Reprints to: Robert W. Kaschub, Jr., M.D., Redington-Fairview Hospital, Skowhegan, Maine 04976.

row at that time showed 80% blast forms. His course through June until his death on July 13th was characterized by intermittent spiking fevers and chills with negative blood cultures, persistence of *E. Coli* in the urine and temporary responses to various antibiotic regimes. In spite of treatment with Vincristine and Prednisone, later Methotrexate® and eventually Daunomycin, his bone marrow aspirations at no time showed complete remission of his disease.

During the last 24 hours of his life two blood cultures were positive for staph aureus. Autopsy revealed a moderate number of adhesions in the left upper quadrant. There was no evidence of subphrenic or other intraperitoneal suppuration which could be related to the splenectomy. There was leukemic infiltration of the bone marrow, liver and para-aortic nodes. In addition, there was acute inflammatory changes and bacterial colonization in the liver and kidneys.

### DISCUSSION

In retrospect what probably occurred in our current case is that a pathological rupture of the spleen occurred during the period immediately following admission to Mary Hitchcock in mid-April. There was a sudden onset of abdominal pain, hypotension and drop in hemoglobin with no evidence of gastrointestinal or retroperitoneal blood loss. Epigastric localization of the pain of splenic rupture was not unusual in a review of 114 cases from the Mayo Clinic.<sup>5</sup> Pure epigastric pain was also present in the case of spontaneous splenic rupture during leukemia reported by Ravich.<sup>3</sup> In the above-mentioned Mayo Clinic study, only 3.4% of the cases of post-traumatic splenic rupture had the classic radiation of pain to the left shoulder. A small, left pleural effusion, similar to that noted in our case on the day following the onset of abdominal complaints, was described in two of four cases of occult splenic rupture reported by Drapanas<sup>6</sup> and in one of Tartaglia's cases of rupture during leukemia.<sup>20</sup>

From April 24th until the second episode of hypotension and abdominal pain on May 8th, the patient was asymptomatic. Although delayed splenic rupture has been described up to two years following trauma,<sup>5</sup> 75% occur within two weeks.<sup>7</sup> That this second episode occurred within 24 hours of performing 25 sit-ups could be coincidental or indeed may be sufficient trauma to preclude the diagnosis of "spontaneous" splenic rupture. Hence, the choice of the phrase "pathological rupture." In even those cases accepted by Stites and Ultmann as spontaneous rupture, there are possible episodes of minimal trauma or exertion which could be viewed as precipitating factors. These include "onset after lifting a barrel,"<sup>8</sup> "fall six weeks before rupture,"<sup>9</sup> "onset of pain after bowel movement"<sup>10</sup> or "pain on lifting coal sack one month before splenic rupture."<sup>11</sup> Without debating the role of trauma in either this or previous cases, it seems reasonable from a practical point of view merely to add splenic rupture to the long list of possible catastrophic events which can complicate the course of treated or untreated leukemia, such as septicemia, spontaneous retroperitoneal or gastrointestinal bleeding, small bowel perforation following the use of Methotrexate, or of course, peptic ulceration as a complication of steroid administration.

Of the cases reviewed, approximately 85% were males.

The timing of splenic rupture varies from coincident with or prior to the diagnosis of leukemia<sup>13,14,15</sup> to 20 months following diagnosis.<sup>2</sup> All forms of leukemia have been associated with an excess of acute leukemia. Although as in our case, there is a tendency for splenic rupture to occur early in the course of leukemia or during exacerbations, at least one case<sup>22</sup> occurred in a case of chronic lymphocytic leukemia in which the patient was completely asymptomatic apart from the symptoms of splenic rupture. The diagnostic possibilities in cases of hypotension of acute onset during leukemia are as intimated above, protean. The diagnosis, in early stages, of ruptured spleen is primarily based on a high index of suspicion and repeated clinical examination. The spleen has been palpable in many of the cases reviewed but, as shown in this case, the absence of splenomegaly is not helpful in the differential diagnosis. In the current case, a fall in hemoglobin pointed to occult bleeding. Slate et al<sup>17</sup> points out that within 24 hours of rupture in traumatic cases 72% of patients failed to show a drop in hematocrit and in fact, in 18% of these cases, the hematocrit rose during this critical period. They agree with Pratt et al from the Mayo Clinic<sup>5</sup> that plain films of the abdomen are likewise of little use during the first 24 to 48 hours. In our case, for example, it was a full 72 hours before the classic left upper quadrant mass with medial displacement of the stomach was seen in spite of repeated abdominal films. Earlier films merely confirm what was obvious on clinical grounds: that there was free fluid in the peritoneal cavity. Coeliac angiography was reported by Thompson et al<sup>18</sup> to be highly safe and accurate in the diagnosis of rupture of the spleen with no false positives or false negatives in ten cases. Sufficient experience has not been reported to judge whether this invasive technique could be applied to patients with leukemia in the platelet and granulocyte difficulties which can be present. Diagnostic paracentesis was instrumental in the correct diagnosis in both of Tartaglia's patients.<sup>20</sup> In both of these cases, the platelet counts were described as "normal." In the present case, the presence of intraperitoneal blood was suspected on other grounds and it was felt that a significant thrombocytopenia represented a relative contraindication to this procedure.

The pathogenesis of splenic rupture in leukemia is unclear. This was discussed by Hynes et al<sup>19</sup> and later by Stephens<sup>2</sup> and Ravich.<sup>3</sup> They mentioned the increased size of the spleen making it more vulnerable to the trauma, coagulation disorders, splenic infarction and the infiltration of the spleen by leukemic tissue. Splenomegaly has indeed been present in all of the cases presented to date although this has not been evident clinically in all of the cases. The present 235 gram spleen is indeed the smallest reported and other have ranged as high as 1800 grams. Platelet determinations in close relationship to the occurrence of rupture are not available on many of the previously reported cases. If, as postulated, in the current case initial splenic rupture occurred in April, the platelet

*Continued on Page 277*



# Maine Heart Association Notes



20 Winter Street, Augusta, Maine

## Gallop Rhythm

ROBERT A. O'ROURKE, M.D.\*

The term "gallop rhythm" was originated by Professor Bouillaud and propagated by his pupil Potain over a century ago. However, even today, the majority of gallop sounds are unrecognized and misinterpreted. This is unfortunate because gallop rhythm is frequently the only positive physical finding in patients with heart disease and its presence often has important diagnostic and therapeutic implications.

Gallop rhythm is an auscultatory phenomenon in which a tripling or quadrupling of heart sounds resembles the canter of a horse. Tachycardia need not be present. Gallop sounds are low frequency diastolic events related to two periods of ventricular filling; the rapid filling phase (third heart sound, ventricular gallop) and the presystolic filling associated with atrial systole (fourth heart sound, atrial gallop). Both third and fourth heart sounds may be present in the same patient. During tachycardia or advanced first degree A-V block, both gallop sounds may occur at almost the identical time, producing a summation gallop. The summation gallop may be confused with the diastolic rumble of mitral stenosis. However, decreasing the heart rate by transient carotid sinus pressure will separate the two gallops and distinguish them from a diastolic rumble.

### FOURTH HEART SOUND

The fourth heart sound (presystolic gallop, atrial gallop) is a low frequency sound produced in the ventricle during the ventricular filling associated with an effective atrial contraction. The atrial gallop is occasionally heard in patients with no evidence of heart disease, particularly during times of high cardiac output such as occur with thyrotoxicosis or pregnancy. This presystolic sound is also heard in patients with first degree atrioventricular block (prolonged P-R interval on electrocardiogram). However, an audible fourth heart sound usually indicates heart disease and its presence is usually dependent on three factors: (1) effective atrial contraction, (2) unimpeded ventricular filling, and (3) diminished ventricular distensibility (stiff ventricle).

The fourth heart sound is never present in patients with atrial fibrillation and is an uncommon

finding in patients with diminished left ventricular filling due to moderate or severe mitral stenosis. It is usually absent in patients with constrictive pericarditis. The atrial gallop generally signifies reduced ventricular distensibility and is frequently but not always associated with an increase in ventricular end-diastolic pressure.

The presystolic gallop may originate in the right or left ventricle. Left-sided fourth heart sounds are commonly present in patients with diastolic hypertension, severe aortic stenosis, myocardopathies and acute mitral regurgitation. Most patients with an acute myocardial infarction and sinus rhythm have a prominent fourth heart sound. A presystolic gallop is a frequent finding in patients with coronary artery disease but may be only heard during an episode of angina.

Left-sided fourth heart sounds are frequently accompanied by visible and palpable presystolic distension of the left ventricular apex. This is best observed with the patient on his left side. On phonocardiogram, the low frequency vibrations of the atrial gallop are coincident with the presystolic "a" wave of the apexcardiogram. The left-sided fourth heart sound is best heard by using light pressure with the bell of the stethoscope and its maximal intensity at the left ventricular apex with the patient in the left lateral position. If patients are not turned to this position during auscultation, over 50 percent of atrial gallops will be undetected. The left-sided presystolic gallop is usually most prominent during the expiratory phase of respiration.

The atrial gallop increases in intensity and the fourth heart sound — first heart sound interval lengthens as the result of an increase in ventricular filling, a prolongation of atrioventricular conduction or a decrease in ventricular distensibility. During bedside auscultation, the left-sided atrial gallop is usually accentuated after coughing and during mild supine exercise. It also becomes prominent during a sustained handgrip contraction. During these maneuvers, the fourth heart sound-first heart interval frequently increases in contrast to splitting of the first heart sound which becomes less evident with the increase in heart rate.

Right-sided fourth heart sounds are frequently present in patients with right ventricular hypertrophy secondary to either pulmonary hypertension or pulmonary stenosis. They are commonly accompanied by a prominent presystolic "a" wave in the

\*Department of Medicine, University of California, San Diego, California.

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jugular venous pulse and a parasternal or subxiphoid right ventricular lift. These low frequency sounds are heard best at the third to fifth left intercostal spaces and often increase in intensity during inspiration.

Both the right and left-sided fourth heart sounds can often be distinguished from the two components of the first heart sound by applying increasing chest wall pressure with the bell piece of the stethoscope. As pressure is increased, the bell functions as a diaphragm and low frequency sounds such as the fourth heart sound usually decrease in intensity or disappear. In contrast, the high frequency components of the first heart sound persist unchanged.

### THIRD HEART SOUND

The third heart sound (ventricular gallop, proto diastolic gallop) is a low frequency sound produced in the ventricle in early diastole during passive rapid filling. This early diastolic sound is a frequent finding in normal children and young adults and also in patients with a high cardiac output. However, the presence of a third heart sound in patients over

the age of 40 generally indicates ventricular decompensation or A-V valve regurgitation. The ventricular gallop, like the fourth heart sound, can be produced in either ventricle and is heard best with the bell piece of the stethoscope. The left-sided third heart sound, commonly present in patients with left heart failure or mitral regurgitation, is heard best on the left ventricular apex with the patient in the left lateral position. This low frequency sound is most prominent during expiration. The right-sided ventricular gallop, frequently present in patients with right heart failure or tricuspid regurgitation, is heard best at the lower left sternal border and increases with inspiration. It is often accompanied by a prominent late systolic "v" wave in the jugular venous pulse, the systolic murmur of tricuspid regurgitation, and a larger liver which pulsates in late systole. The third heart sound occurs later in diastole than the higher frequency A-V valve opening snap from which it must be distinguished. The ventricular gallop, unlike the opening snap, decreases or disappears when the patient assumes the upright position.

### PATHOLOGICAL RUPTURE OF THE SPLEEN IN ACUTE LEUKEMIA — *Continued from Page 275*

count of 6,000 may have played a role. In one other case reported with platelets below 20,000 at the time of rupture, splenic infarction and infiltration by leukemic tissue was found. Splenic infiltration such as was found in the current case has been the most frequent finding in the other cases reviewed. A definite relationship to the coagulation disorder has been least well documented.

The prognosis in splenic rupture in leukemia is grave. In the non-operative cases reviewed, the mortality was 100%. There have been seven cases reported in which splenectomy has been carried out<sup>3,13,15,20,22</sup> including the present case. In two cases, death occurred in the immediate postoperative period, one<sup>15</sup> five days post-op. of peritonitis and one<sup>3</sup> four days post-op. of unknown cause. In three other cases,<sup>13,20</sup> surgery was successful with survival and follow-up of 18 days to one month. In none of these three cases was thrombocytopenia a problem. The present case with successful splenectomy, in spite of thrombocytopenia and virtually no granulocytes, demonstrates that the quite natural hesitancy to intervene in poor risk patients should be overcome. With modern techniques of fresh blood and platelet infusions, surgery is not ruled out. It is probably of significance that the operative period was coincident with a partial remission. The survival of patient following splenectomy is probably best correlated with the course of the underlying disease itself.

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## Franklin County Up To Date\*

DAVID C. DIXON, M.D.

It is once again a pleasure to be able to address the House of Delegates. If you will recall, last year I spoke to you about the embryonic ideas of a few physicians in Franklin County in regard to developing a sensitive, responsive Health Delivery system in that rural area, with special reference to increasing accessibility on both an economic and geographic basis and to delivering "equality of quality health care." To quote from my talk of last year – the purpose of our efforts was – "the establishment of a comprehensive Health Delivery System responsive to the needs of the individuals it serves, coordinated in its efforts, efficient in its management and use of personnel and organized to detect patterns of disease within the population served."

It was well recognized that the development of such a system was to be no easy task. However, the various portions of the system were so interrelated that it did not seem feasible to approach each individually – developing the system in a piecemeal fashion.

In June of last year, we had prepared and submitted a request to OEO for planning funds to establish the concepts and do the necessary spadework involved in developing these concepts. I recall saying that I hoped I would be able to come back this year and give some sort of positive progress report. I'm happy and proud to be able to say that progress has been made.

Happy – because we have proven our ability to establish funding mechanisms; have received some national recognition; and have been able to relate to our peer organization on a local, state and national level.

Proud – because what progress we have made has been due to the commitment of 3 other physicians in Farmington, in coordination with the Franklin County Community Action Agency, to develop the concepts necessary in establishing an experimental model of health delivery in a rural area, with particular reference to improving that delivery for the economically indigent population.

So you won't hold your breath too much longer, we were funded on a planning basis by OEO in late August, 1970. Interestingly, this grant came to the Community Action Agency rather than to any medical group. This grant provided funds for organizational development; establishment of financial, physical and personnel needs for supporting the system; and salary support of some planning personnel. Our acceptance of this grant in essence committed us to developing and submitting an operational grant request to OEO by May 1, 1971. We did it – I'm not sure how – but it's done.

I think I can best and most rapidly explain to you

what we are planning on doing by relating to you the organizational development and some of the major objectives of the organization.

In casting about for the proper organizational structure under which to develop a health delivery system, it became clear that no organization with the necessary responsiveness and direction of purpose was available in Franklin County. Additionally, the four physicians most actively involved in the development of the conceptual aspects of the delivery system were anxious to form some sort of a group arrangement. Sensitivity sessions, legal consultation and numerous philosophic confrontations have resulted in the formation of a non-profit health service corporation, incorporated under existing Maine statutes, (Title 13, Chapter 81, Section 24) – Rural Health Associates. Under this statute, the Board of Directors of the corporation must maintain providers of health services as a majority of its members.

In addition to the Board of Directors, we will have a Board of Advisors which will function as –

1. An advisory board.
2. A grievance committee.
3. A vehicle of disseminating information to and from the Board of Directors and consumers.

The Advisory Board will consist of 1/3 subscribers to the plan developed, 1/3 providers or provider representatives, and 1/3 community members. This type of structure will, we hope, ensure the continuing sensitivity and responsiveness of the Board of Directors to the perceived health needs of the community.

What are some of the objectives of the organization?

I will list five and describe them briefly. They are as follows:

1. Improve accessibility to health care in the West Central Maine Region.
2. Utilize new concepts of payment and delivery of health care and evaluate their impact on health in the community.
3. Increase emphasis on comprehensive and preventive approaches to health care.
4. Coordinate other health efforts in the West Central Maine Region.
5. Embark upon education programs to improve not only health but also the socio-economic status of individuals within the service area.

### IMPROVEMENT OF ACCESSIBILITY

This has both physical and economic components. In WCM, we have a total population of 29,375, a land area of 1985 sq. miles, 23 towns, only four of which have populations over 3,000, and a lot of poverty. Twenty-three percent of the families have an annual income of less than \$3,000; another 26% of families have incomes

\*Presented at the annual meeting of the House of Delegates of the Maine Medical Association, June 13, 1971.



less than \$5,000. The perimeters of the area are about 75 x 25 miles – and the indigent are scattered through the area in small pockets.

The economic inaccessibility has been approached through request for subsidization of health care from OEO. In our original request, we have included only those below the \$3,000 level which amounts to about 6,600 individuals. Over a 2-year period, we will attempt to enroll and supply systematized comprehensive health care to 75% of this population.

Geographic accessibility involves the decentralization of facilities by establishing ambulatory centers in Rangeley, Kingfield and the Jay-Livermore Falls area; manning these centers on a 24-hour basis with appropriate use of paraprofessionals; and maintaining close centralized and physician control by full use of communications systems – in particular – interactive closed circuit TV.

#### UTILIZATION AND EVALUATION OF NEW CONCEPTS OF PAYMENT AND DELIVERY OF HEALTH SERVICES

We feel that the prepayment concept for health care affords the proper financial incentive for physicians, i.e., payment for maintenance of health. We also recognize that at present a dual choice of payment for health services must be available, namely fee-for-service and prepayment. Through the utilization of capitation and prepayment for the OEO eligibles, we hope to develop accurate actuarial figures for delivery of this type of service in West Central Maine. At the same time, Rural Health Associates will offer their services on a fee-for-service basis to the remainder of the population. It is anticipated that by the end of the experimental period, other prepayment groups can be enrolled.

New concepts of delivery involve the team approach to health care with the utilization of paraprofessionals in a manner to improve the efficiency of the physicians.

We fully embrace the concept of paraprofessionals and at the present time have two working with us. One is a Pediatric Nurse Associate trained through Dr. Hallett's program at Maine Medical Center, who in the space of 3 months has increased the practice of her physician by 75%. The second is a MEDEX from the Dartmouth College program who is still in the preceptorship portion of his training, but is already making his presence felt in a positive manner.

#### INCREASE EMPHASIS ON COMPREHENSIVE AND PREVENTIVE APPROACHES TO HEALTH CARE

This includes many facets of initiative and utilization of different techniques in delivering health care. Health education programs on a local level will be developed with the aid of the local branch of the University of Maine (in Farmington), and all modes of delivery (including closed circuit TV) will be utilized in disseminating this information.

A data base of health statistics and symptom complexes will be developed for comparison with other populations. More importantly, this data base will lend itself to the recognition of health trends within the local population.

In turn, preventive health programs will be developed to combat the adverse trends detected.

At the same time as scientific establishment of health trends is being done, we must and plan to remain sensitive to the perceived needs within the community so that rectifying measures may be adopted. At present, one of the most pressing problems as ascertained by the communities is poor dental care. We have already made arrangements to employ a dentist and start supplying preventive dental care by fall of 1971.

#### COORDINATION OF OTHER HEALTH EFFORTS

We plan to coordinate the efforts of such agencies as Franklin County Memorial Hospital, Franklin Area Mental Health, Androscoggin Home Health, Public Health Nurses, school nurses, etc., to the benefit of our patients. Duplication of the services delivered by these agencies would be a ridiculous and senseless waste of money. Through contractual arrangements, we plan to use their strengths to supplement our abilities.

#### EDUCATION

This is probably the most important facet of our program and is multilateral. It begins with the continuing medical education of physicians and paraprofessionals to maintain and improve their quality of care. Specific educational needs will be perceived by standardization of medical records and peer review of both in and outpatient services.

It has to do with development of health educational material and dispensing of same through various media.

It continues on to gaining environmental knowledge and development of maintenance and improvement programs which very likely will involve social education.

Hopefully, the system will provide a mechanism for training professional and paraprofessionals in the total concept of community health. We honestly don't know where the educational aspects of the system will lead us. We only hope to maintain awareness of whatever challenges will arise.

This then is a summary of what has developed over the past year. Our challenge is just now beginning. The next two years will be, to say the least, hectic. Our goal is to be relatively self sustaining by the end of two years as regards health care – assuming that some sort of subsidy will be available for the indigent.

To paraphrase my closing remarks of last year – Maine is the most rural state east of the Mississippi in terms of population density. The challenge to us, the members of the Maine Medical Association, is to take the lead in the development of concepts to meet the "health right" demand of our rural constituents and to deliver equality of quality health care.

#### ADDENDUM

Since the delivery of this talk, Rural Health Associates has been awarded a grant of \$1,008,000 from OEO and \$48,000 from Bingham Associates Fund to develop *their* concepts.





DEAN H. FISHER, M.D.  
COMMISSIONER

## State of Maine

# Department of Health and Welfare

## Maine's Hill-Burton Program

WOODROW E. PAGE\*

Hill-Burton's Silver Anniversary on August 13 marked a quarter century of service to the nation in the form of a federal grant-in-aid program which has provided nearly four billion dollars in tax funds for construction of non-profit hospital and medical facilities.

Public Law 79-725, the original legislation, became law on August 13, 1946 and provided grant money to assist in the construction of hospitals and public health centers. It required that each State establish an agency to administer the Program, inventory existing facilities and develop a State Plan to determine the nature, location and size of facilities eligible under the Federal Act and priority system based on beds for funding purposes.

At intervals throughout the years the Program was amended by Congress, each time broadening its scope and providing additional grant funds as the health needs of the public required more and varied types of services and facilities.

In 1954, nursing homes, diagnostic and treatment centers, rehabilitation facilities and chronic disease hospitals became eligible for construction grants. Grant funds were made available in 1956 for research, experimental construction and demonstrations showing how hospital services, facilities, and resources could be used more effectively.

A major change occurred in 1964 when the Hill-Harris Amendments to the Hill-Burton Program became effective. This legislation provided funds for replacement and modernization of all categories of facilities eligible under the Program, and established a new category of grants for areawide planning of health facilities.

A physical plant evaluation survey of all hospital and medical facilities in Maine was conducted in 1965 and 1966 to determine where modernization funds were most needed. A resurvey of the physical plant of all general hospitals and some long-term care facilities has been made this year.

The most recent change in the Program occurred in

June 1970 when Congress passed the Medical Facilities Construction and Modernization Amendments of 1970 (P.L. 91-296). Construction grant authorizations for the various categories were increased considerably, although actual fund appropriations have remained at substantially the same levels as previously.

Nationwide during the past quarter of a century the Hill-Burton Program has assisted in financing 10,633 projects in 3,800 communities involving a total cost of 12.5 billion dollars. Over 466,000 hospital and long-term care beds have been provided under the Program, plus more than 3,000 projects for out-patient facilities, public health and rehabilitation centers and State health laboratories.

The citizens of Maine have benefited under this Program through federal allotments totalling over \$26,000,000, allocated to 92 projects in 36 communities involving a total cost of more than \$72,000,000. Among other new, expanded or modernized health facilities, Hill-Burton has assisted in providing 2,840 hospital and long-term care beds in the State since 1946.

The Program is administered in Maine by the Health Facilities Planning and Construction Service, State Department of Health and Welfare, Augusta. Policy decisions, approval and funding of projects and approval of the annual State Plan Revision are among the functions of the Governor-appointed 16 member Health Facilities Advisory Council, which provides guidance in planning health care facilities for the people of Maine. Program review and technical assistance in plan and specification review is obtained from the Public Health Service Regional Office in Boston.

One of the more important documents produced by the State Agency is the annual revision of the Maine State Plan for the Construction and Modernization of Hospitals and Medical Facilities. This 180 page Plan provides a statewide program for construction, expansion or modernization of the various categories of facilities for which grant funds are available. The latest fiscal year patient utilization statistics are obtained from health facilities each year and combined with current and projected population estimates in a formula that determines in-patient hospital and long-term care bed needs for each of the 21

\*Director, Health Facilities Planning and Construction Service, Department of Health and Welfare, State House, Augusta, Maine 04330.

hospital service areas in the State. Opportunity is provided for "review and comment" of the State Plan by the State Comprehensive Health Planning Agency (314a). Also the five regional health planning agencies (314b) are offered the opportunity to "review and comment" on the State Plan and on all project applications originating in their regions.

The principle changes of interest in recent Hill-Burton legislation are:

1. Provision of a program of loan guarantees with interest subsidies to nonprofit agencies and direct loans to public agencies to aid in the modernization or construction of health care facilities. The amounts to be guaranteed would be allotted to the States on the basis of their relative financial need, relative population and relative need for additional or modernized health facilities. The loan guarantee program provides for interest subsidies to be paid by the Federal Government at a rate of 3% in the case of nonprofit facilities. Loans would be arranged with private lenders and guaranteed by the Federal Government.

Under the same authority the Federal Government would make direct loans to publicly-owned facilities at the prevailing interest rate less 3%.

A major drawback in applying for loan guarantees with interest subsidies for nonprofit agencies is that the Federal Government requires a first lien on the facility. This may preclude additional loans from private lenders. However, arrangements may be made for FHA loans which could be used with grants and/or loan guarantees with interest subsidies.

2. The State Advisory Council must now include representatives particularly concerned with education or training of health professions personnel.

3. The definition of hospital now includes education and training facilities in health professions. It eliminates obstetrics which was required under previous regulations.

4. The Diagnostic and Treatment Centers category has been redesignated Outpatient Facility category. Also the limitation on non-profit sponsorship has been eliminated. This means that non-profit sponsors other than hospitals are eligible to receive assistance.

5. The term extended care facility has been included in the definition of long-term care facility.

6. State administrative funds have been increased

from 2% to 4% of the State's allotment of grant funds with the requirement of 50% State matching.

7. Equipment only projects are approvable when the equipment will provide a service not previously provided in the community. This cannot be interpreted to include the expansion of a service which already exists in the community.

8. Before a project for construction or modernization of a hospital is approved, there must be adequate assurance that extended care services will be provided in facilities at least in the immediate proximity to such hospital and have transfer agreements with such hospital.

9. Availability of allotments has been extended to three years for both grants and loans.

10. Transfer of allotments between categories has been liberalized.

11. The legislation requires that the 314(b) area-wide health planning agencies be provided an opportunity to consider all applications for assistance before such applications are approved.

12. A facility which received a grant or loan or loan guarantee must file at least annually with the State Agency a statement to accurately show:

- (a) The financial operations of the facility.
- (b) Costs to the facility of providing health services in the facility and the charges made by the facility during the period for which the statement is filed.

13. Special consideration may be given within priority groupings for a project application:

- (a) For an outpatient facility located in and providing services for residents of an area determined to be a rural or urban poverty area, or projects that offer potential for reducing health care costs through shared services among health care facilities, through inter-facility cooperation, or through the construction or modernization of free-standing outpatient facilities.
- (b) For facilities which, alone or in conjunction with other facilities, will provide comprehensive health care including outpatient and preventive care as well as hospitalization.
- (c) For facilities which will provide training in health or allied health professions, and
- (d) For facilities which will provide to a significant extent for the treatment of alcoholism.





## News, Notes and Announcements

### Dr. Sullivan Awarded Roselle W. Huddilston Medal

George E. Sullivan, M.D., chief of anesthesiology, Elizabeth Ann Seton Hospital, Waterville, was awarded the Roselle W. Huddilston Medal by the Maine Tuberculosis and Health Association at its recent annual meeting.



The citation of Dr. Sullivan as medalist was given at a joint luncheon of the TB association and its medical section, the Maine Thoracic Society, by Margaret M. Jones, R.N., of Portland, who was the 1970 Huddilston medalist. In citing Dr. Sullivan's accomplishments, Mrs. Jones said, - "... In a quiet and inconspicuous manner, he has done more for medicine and the health field in Maine than many would ever realize. As secretary of the medical board of Registration of Maine, he has painstakingly and conscientiously tried to recruit and screen competent doctors to serve the people of the State of Maine. From the beginning of his medical practice in Maine prior to World War II, and as a general practitioner in Oxford and Bingham, Dr. Sullivan has had a broad interest in health care for the people of Maine and his interest has routinely extended beyond the limits of his practice and community. The forthright points-of-view and active involvement of the 1971 medalist are refreshing and of great public value."

Dr. Sullivan is past president of the Somerset County Medical Society, the Maine Medical Association and the Maine Chapter, American Cancer Society. He is a past chairman of the Advisory Committee to Medical Care Programs of the Department of Health and Welfare and of the first oral polio clinic of the Waterville area. He has served as medical director, Upper Kennebec Valley Health Agency, as a member of the State's Advisory Council for Comprehensive Health Planning, and as a

member of the Task Force Advisory Committee for Vocational Rehabilitation. He is also a corporator of the Maine Regional Medical Program and is especially interested in the Peer Review Committee of the Maine Medical Association which is designed to help maintain the quality of medicine and establish high standards of practice - both for medical care and medical ethics.

The Roselle W. Huddilston Medal Award was established by the Maine TB and Health Association in 1957 to honor the memory of Mrs. John H. (Roselle W.) Huddilston of Orono as a dedicated, revered and extremely efficient volunteer health worker ... and to recognize and publicly acknowledge annually, a Maine citizen who has given, over and beyond vocational efforts, "distinguished service and outstanding contributions in the field of health to the people of the State of Maine."

### Dr. Pritham Named Honorary General Chairman of 1971 Christmas Seal Campaign

Dr. Fred J. Pritham of Greenville has been named as Honorary General Chairman of the 1971 Christmas Seal Campaign in Maine.

Dr. Pritham's life as a general practitioner in medicine started in Greenville in 1905, two years prior to the first introduction of Christmas Seals to the American public.

As a lifetime exponent of "no smoking," and as one who has vigorously proclaimed the advantages of "clean air," Dr. Pritham was working for two goals of the Maine Tuberculosis and Health Association long before others recognized them as problems.

The current 1971 Christmas Seal Campaign has a monetary goal which envisages major increases in Christmas Seal funds going to meet the needs of greater knowledge, care, treatment, prevention and control of respiratory diseases, especially emphysema, and chronic bronchitis.

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U.S. PATENT NO. 2,895,877

## Necrology

MERLON A. WEBBER, M.D.

1883-1971

Dr. Merlon A. Webber, 87, of Pittsfield, Maine died at his home in Pittsfield on September 21, following a long period of ill health.

Born in Burnham, Maine on November 1, 1883, he was the son of Dr. and Mrs. George Webber. He attended Coburn Classical Institute in Waterville, was graduated from Bowdoin College and received his medical degree from Bowdoin Medical School in 1910. At Bowdoin, Dr. Webber was a member of the Zeta Psi fraternity, and was one of seven in three generations of Webbers to attend Bowdoin and later enter the medical profession — five as doctors, two as dentists. Following his internship at the Central Maine General Hospital in Lewiston, Dr. Webber began his practice in Portland.

In 1917, Dr. Webber entered the Army Medical Corps and was serving with the rank of Captain in Puerto Rico when World War I was declared. During the war, he was stationed in Panama. In 1919, he returned to his practice in Portland, moving to Pittsfield in 1925.

Dr. Webber was an honorary member of the Somerset County Medical Society and the Maine Medical Association, having received a 50-year pin in 1961, a 55-year pin in 1966 and a 60-year pin at the June 1971 annual session. He served as chief of staff at the Scott-Webb Memorial Hospital in Hartland and was an anesthetist there for many years.

Active in community affairs, Dr. Webber served on the school board, was the town's health officer for many years and a charter member of the Pittsfield Kiwanis, serving as its president for two years. He was also a lieutenant governor for the 9th District of that organization.

Surviving are his widow, Grace Craig Webber; one son, George F. Webber; three grandchildren, Wallace, Dorothy and Milton, all of Pittsfield; three step-sons, Nicholas J. Craig of Wilton, Russell A. Craig and A. Brian Craig, both of Pittsfield; two step-daughters, Mrs. Manley Cuddy of Winterport and Mrs. Richard Anderson of Norwell, Massachusetts; also a cousin and two nephews.

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## County Society Notes

### HANCOCK

The Hancock County Medical Society met on September 8, 1971 at Jasper's Restaurant in Ellsworth, Maine, with seven members present and three guests from Waldo County and one from Washington County, in addition to the President of the Maine Medical Association, Dr. Linus J. Stitham and his wife.

Items of business were:

A brief outline by Dr. James H. P. Garnett, from the Staff of RMP, of the present state of planning for the Medical School for Maine. This provided an opportunity for serious questions and earnest discussion on the part of the members present, indicating an urgent need for further participation by the physicians in Maine in the shaping of this important and far-reaching project.

The second item, and like unto the first, in its significance for the Maine Medical Association members, was the discussion of development of the State Peer Review Committee and the need for formation of functioning local Peer Review organization. It had been the intention of calling a joint three-county meeting to include representatives from the newly-formed district at the earliest possible date of the Hancock Society's monthly schedule so that the imperative decision making could be set in motion. Unfortunately, the untimely and tragic accident occurring to one of our most vigorous general practitioners, Dr. Eliot T. Stadler, and leading to his death a few days after our meeting, prevented several members from attending and providing a useful representation from the three counties to discuss and vote upon this matter of Peer Review. It was made clear at the meeting, however, that there is a State Peer Review Committee newly formed at the June annual meeting of the Maine Medical Association, which has representation from each of the districts in the revised Association organization. This State Committee stands ready to assist local review organizations and indeed cannot perform its functions without this basic unit of function. After considerable enlightened discussion, it was the sense of the meeting to contact the Chiefs of Staff at each of the hospitals in

Hancock and Washington County to request representatives for a local Peer Review Committee on a district level; Dr. Theodore J. Raia, Jr. being the representative from Waldo County Hospital, and who was accompanied at this meeting by Drs. John A. Caswell and Euclid M. Hanbury, Jr. Dr. John Kazutow took responsibility for carrying this message to the Washington County group.

The final item of business was a discussion by Dr. Herbert T. Wilbur, Jr. of a letter from the Associated Hospital Service of Maine requiring explanation of the reasons for anesthesia given for routine proctoscopic examinations. Dr. Wilbur's principle objection was that this request came from a clerical review of his Blue Shield claim rather than from a person of equal professional status to himself. It was agreed that in a system of local peer review such requests for additional information would be much more expedient and agreeably handled by ones own colleagues in the profession, and that we as physicians would be much more responsive to this type of request. Dr. John G. Murray, Jr. appointed a committee to frame a resolution concerning Dr. Stadler to be presented at our next regular meeting.

BRADLEY E. BROWNLOW, M.D., *Secretary*

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### KNOX

The Knox County Medical Society met at the Sail Loft in Rockport, Maine on September 14, 1971. Twenty-six members were present and two guests, Dr. William Strauss, newly elected Executive Director of the Penobscot Bay Medical Center, and Dr. Phillip Groce, a physician interested in practicing family medicine in this area. The minutes of the June meeting were read and accepted.

Dr. Henry O. White introduced the guests and the new physicians who have come to practice in this area, including Dr. Collins in Pediatrics, Dr. Dreher in Ophthalmology, Dr. Sube in Surgery and Dr. Macbride in Psychiatry.

*Continued on Page 286*



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It was moved and seconded that Dr. Collins be accepted as a member of the Knox County Medical Society. His transferral letter from the Springfield Medical Society was received.

Dr. William E. Nuesse introduced the following resolution: "The Knox County Medical Society expressed its deep appreciation to Mr. Richard H. L. Sexton for his great effort as President of the Penobscot Bay Medical Center. His willingness to take on the additional responsibilities of Acting Executive Director and to hold the organization together at the most important time in the Center's development, to give to all of us the correct advice, and to listen to our complaints and doubts during the past months has made us realize what a great job he has done. We thank you."

Dr. White stated that the OEO grant will soon be implemented and physicians will be called upon to provide care under this grant. Dr. Williams is discussing this with his fellow Internists. Also, the "Sanazaro" grant will require an additional physician to be working under that grant and physicians will soon be contacted concerning this work.

Dr. White next discussed some of the future ideas for meetings the coming year and some of the problems facing the physicians in the coming year. He mentioned Emergency Room coverage for the OEO grant, the State Peer Review Committee, the MEDEX Program, Group insurance and Malpractice involving the Penobscot Bay Medical Associates which might be bought at a cheaper rate than we now pay, and payment for non-physician assistants.

New Business: None.

Dr. William Strauss was introduced as the new Medical Executive Director of the Penobscot Bay Medical Center. He discussed his past experience with health programs and health delivery in small communities. He then went on to discuss some of his ideas about health delivery under the Penobscot Bay Medical Center program.

The meeting was then adjourned.

WILLIAM E. NUESSE, M.D., *Secretary*

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# The Journal of the Maine Medical Association

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## Penicillin-Induced Hemolytic Anemia

ALAN W. BOONE, M.D. and JOE R. WISE, JR., M.D.\*

Drug-induced hemolytic anemia can be a complication of treatment with penicillin. Severe penicillin-induced hemolysis added to the morbidity and length of hospitalization in the following case.

### CASE HISTORY

L. C., a 57-year-old farmer, was admitted to the hospital on September 5, 1970 for the treatment of progressive heart failure. He had a history of rheumatic fever as a young man. Six months prior to admission he developed "flu" with malaise and a non-productive cough for about two weeks. Following this, he remained ill with a fever, chills, progressive malaise and exertional dyspnea. Three months before admission he was found to be anemic. Two weeks before admission he was observed to have a loud heart murmur and signs of congestive failure. In this last month before admission, he had noted intermittent, tender, red swellings of his fingertips. There was no history of dental work. He did admit to symptoms of prostatism.

On examination, he appeared chronically ill, BP 140/20, pulse 90 and regular, temperature 101°. His upper teeth were absent and lower teeth were grossly carious. The jugular venous pulses were normal and the lungs were clear to auscultation. The carotid pulse was collapsing. The left ventricular impulse was sustained, lateral to the mid-clavicular line, and there was a harsh mid-systolic ejection murmur at the aortic area with a systolic ejection click. There was a loud decrescendo early diastolic murmur along the left sternal border. The first heart sound was loud at the apex. The liver was not enlarged but the spleen tip was palpable. Neurologic examination was within normal limits and no embolic phenomena were noted.

Important laboratory findings included the following: hemoglobin 9.7 grams per 100 ml, hematocrit 28%, white cells, 7,300/mm<sup>3</sup> with a differential of 78 polys, 7 bands, 13 lymphocytes and 2 eosinophils. Urinalysis revealed 5-10 white cells and 1-3 red cells per HPF. A chest x-ray revealed a normal contour of the heart and great vessels, and an electrocardiogram showed left ventricular hypertrophy. Four blood cultures drawn on admission grew "streptococcus sensitive to penicillin."

Digitalis and diuretics were continued and penicillin, 10 million units per 24 hours, was begun. His temperature returned to normal by the 5th hospital day and a serum inhibition test done

with the patient's organism showed that there was growth present in all dilutions but none in the presence of undiluted serum. Due to the development of a pansystolic murmur at the apex and the question of the exact identity of the organism, the penicillin was increased to 15 million units daily and streptomycin, 2 grams daily was added on the 11th hospital day. On this regime, the serum inhibited the organism at a dilution of 1:4.

The early hospital course was uneventful until the 44th day, when the patient suddenly developed a fever of 104°, the pulse increasing to 130 and the BP dropping to 100 systolic. There were no signs of heart failure and examination was otherwise unchanged except for the gradual appearance of jaundice. The hemoglobin had fallen to 6.3. Blood and urine cultures (with penicillinase) were negative. Two units of packed cells were transfused and during crossmatching a positive direct Coombs test was noted. The serum haptoglobin was reduced.

Penicillin was discontinued and the patient was given vancomycin, 1 gram daily. Prednisone was begun at a dose of 60 mg daily. The patient rapidly improved and became afebrile, no further transfusion being required. Elution studies demonstrated anti-penicillin antibodies attached to the patient's red cells and in the serum. Further slight hemolysis with jaundice recurred on the 60th hospital day when prednisone was prematurely discontinued, and cleared promptly when resumed at 20 mg daily.

### DISCUSSION

In general, drug-induced hemolysis may be considered in two categories, non-immune and immune. In the former category are the anemias due to intraerythrocytic enzyme defects, aggravated by an oxidant drug, such as the hemolysis produced by primaquine (and a long list of other drugs) in the glucose-6-phosphatase-deficient cell. Cells deficient in other enzymes may also hemolyze when subjected to the same drugs.<sup>1</sup> Abnormal and unstable hemoglobins very rarely are responsible for hemolysis when subjected to the stress of an oxidant drug, such as occurs with hemoglobin Zurich and sulfa drugs.<sup>2</sup>

The case history recounted here, however, is an example of immune hemolysis. This latter type of hemolytic anemia occurs in three major forms. The commonest form of drug-induced hemolysis of the immune type has been termed the stibophen type, or the "innocent bystander" reaction.<sup>3</sup>

\*Assistant Attending Physicians, Sections of Hematology and Cardiology, Dept. of Medicine, Eastern Maine Medical Center, Bangor, Maine 04401.



In this type of hemolysis, antibody reacts with the drug to form an immune complex in the plasma activating the complement system, resulting in lysis of the red cell. Neither drug nor antibody remains on the red cell after washing, and the Coombs reaction is of the non-gamma or complement type. This mechanism of hemolysis occurs with chlorpropamide.<sup>4</sup>

Another well-known but rare type of hemolysis occurs with methyldopa. About fifteen percent of the patients who take this drug longer than six months will develop an antiglobulin (Coombs) reaction of the gamma-G type. Far fewer, less than one percent, develop overt hemolysis.<sup>5</sup> The presence of the drug in the test system is not necessary for a positive reaction, and it has been shown that the drug, in an unknown way, induces an autoimmune hemolysis, the antibody usually having a specificity within the Rh system.

The third type of immune hemolysis, and the type responsible for the morbidity in this case, is the hapten, or penicillin type. Here the drug reacts with a component of the red cell membrane to form a complete antigen. The antibody is bound to the red cell and the Coombs test is of anti-gamma specificity. The drug must be present on the cell for a positive Coombs test to occur, unlike the two other types of immune hemolysis.

There are several important clinical considerations of the penicillin-type of immune hemolysis. Hemolysis is dose-related, occurring only when penicillin is given in doses usually exceeding 15 million units daily, or when poor renal function or the administration of probenecid markedly elevate blood levels of penicillin.<sup>5</sup> The hemolysis may occur independently of other manifestations of penicillin allergy. A number of other drugs have been implicated in this type of hemolytic reaction, including synthetic penicillin-derivatives and possibly cephaloridine.<sup>6</sup>

Treatment of this type of hemolytic anemia should include immediate discontinuation of penicillin and simi-

larly-implicated drugs. Transfusion may be necessary when anemia is severe, but the transfused cells may be destroyed rapidly by the same mechanism. Corticosteroids, initially in high doses, are used to suppress the antibody response and should be given as long as significant numbers of penicillin-coated cells exist in the circulation. The prednisone dose may be reduced after active hemolysis is controlled, but the present case demonstrates the inadvisability of stopping corticosteroids altogether until several (eight or more) weeks have elapsed.<sup>7</sup> A history of such a hemolytic reaction should not preclude penicillin in the treatment of subsequent infections for which it is the drug of choice, providing that the drug is given in low doses.

Penicillin-induced hemolysis is not common. It is important to realize, however, that some patients when exposed to penicillin will develop circulating antibodies capable of causing a severe hemolytic reaction. An understanding of the mechanism of hemolysis is important in its management.

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# Methyldopa, Hemolytic Anemia and Acute Leukemia

ALAN W. BOONE, M.D.\* and ROBERT W. CAREY, M.D.\*\*

A positive direct antiglobulin reaction due to methyldopa has been recognized since 1966. Although an autoimmune hemolytic anemia due to the drug is much rarer than the uncomplicated presence of a positive direct Coombs' test, reports of such drug induced anemia have appeared in recent years.<sup>1</sup> Methyldopa has been implicated only rarely as the cause of neutropenia, agranulocytosis and generalized marrow aplasia.<sup>2-5</sup> One report has appeared suggesting that methyldopa has caused in a single patient both an immune hemolysis and agranulocytosis,<sup>6</sup> the peripheral blood and marrow findings being very similar to the early findings in the present case. The following is a report of a patient on methyldopa therapy who developed a positive nonspecific antiglobulin reaction, hemolytic anemia, and eventually frank promyelocytic leukemia.

## CASE REPORT

A 57-year-old salesman had been taking methyldopa since 1968 for control of hypertension. The dose had been initially 750 mg. daily, this having been reduced to only 250 mg. daily for five months before hospitalization. He was taking no other medication. He was referred on October 24, 1970 due to progressive exertional fatigue and an hematocrit of 17 percent with a leukocyte count of 950 per cubic millimeter. Physical examination was normal except for marked pallor. Additional laboratory findings included hemoglobin 5.3 g. per 100 ml. and a leukocyte differential showing 12 segmented neutrophils, 4 band forms, 2 metamyelocytes and 83 lymphocytes. A platelet count was 318,000 per cubic millimeter, and the reticulocyte count was 3 percent (uncorrected). The blood smear showed anisocytosis and poikilocytosis. Bone marrow examination revealed active erythropoiesis, incomplete arrest of granulopoiesis at the promyelocyte stage and abundant megakaryocytes. Stools were negative for occult blood. Serum iron and iron binding capacity were 308 and 450 mcg. per 100 ml. respectively, and serum haptoglobin was reduced (27 mg. per 100 ml.). B<sub>12</sub> and folate levels were 480 pg and 9.3 ng per ml. respectively. A sucrose lysis test for paroxysmal nocturnal hemoglobinuria was negative. Antinuclear antibodies were present only in a low titer of 1:2 dilutions. The Cr-51 red cell survival was greatly reduced (t<sub>1/2</sub> 11 days).

The direct Coombs' test on the patient's red cells was strongly positive with an antigamma globulin specificity. An eluate prepared from the patient's cells reacted weakly with all the cells of an albumin-suspended panel converted to the antiglobulin test, and his serum also weakly agglutinated an indirect Coombs' test panel. Strongly reactive leukoagglutinins were demonstrated, which had no apparent specificity.

Prednisone, 40 mg. daily, was begun when no improvement occurred two weeks after discontinuing the methyldopa. Little,

if any, response occurred with prednisone therapy, except that the direct Coombs' test gradually became weaker and then negative. The peripheral blood picture began, after about eight weeks, to show an increasing leukocyte count with ever-increasing immaturity, decreasing hematocrit and progressive thrombocytopenia. A bone marrow aspirate January 8, 1971 was diagnostic of myelogenous leukemia, promyelocytic type.

Therapy was begun with cytosine arabinoside 180 mg. and thioguanine 160 mg. daily from January 19 through 25, both discontinued due to the appearance of multiple oral and pharyngeal ulcerations. A low-grade disseminated intravascular coagulation was evident by a fibrinogen concentration of 290 mg. per 100 ml., a Fi test positive to 1:64 and a prolonged thrombin time, all laboratory parameters of the syndrome returning toward normal with heparin therapy. By February 18, peripheral blood and bone marrow examinations suggested that he had achieved at least a partial remission of the leukemia, and he was discharged from hospital clinically improved. An asymptomatic clinical condition and partial hematologic remission persisted to May 1971.

## DISCUSSION

The association of a positive nonspecific Coombs' test, leukoagglutinins, a considerable degree of hemolysis and the subsequent appearance of acute leukemia may be nothing more than a rare coincidence. Hemolysis, admittedly usually of a mild degree, has been noted as one of the many factors responsible for the anemia of leukemia.<sup>7</sup> It does not seem right, however, to discount the striking similarity of the peripheral blood, bone marrow and immunologic findings reported by Clark<sup>6</sup> in a patient who recovered from supposed methyldopa-induced hemolysis and agranulocytosis. It is tempting to postulate that the disappearance of the antiglobulin reaction at the time when frank leukemia became manifest could be related to the unhappy contrast in the outcome of these two otherwise very similar cases. Although it is purely conjectural to propose that a drug reaction was instrumental in the production of leukemia, the case seems to provide food for serious thought.

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\* Eastern Maine Medical Center and St. Joseph Hospital, Bangor, Maine 04401.

\*\* Massachusetts General Hospital, Boston, Massachusetts 02114.

# The Clinical Significance of Bilateral Bundle Branch Block and its Relation to Complete Heart Block and Stokes-Adams Attacks\*

JOE R. WISE, JR., M.D. and WILBUR B. MANTER, M.D., F.A.C.P., F.A.C.C.

Bilateral bundle branch block is now considered to be the most common precursor of complete heart block.<sup>1,2,3</sup> This belief is based on recent clinical experience and the trifascicular concept of the ventricular conduction system,<sup>4</sup> a concept which has been established as a result of experimental studies in animals<sup>5,6</sup> and histopathologic study in man,<sup>7</sup> as well as experience during selective coronary arteriography.<sup>8</sup> According to this trifascicular concept, the common A-V bundle (Bundle of His) divides into three bundles – the right bundle branch and two divisions of the left bundle branch, the anterior and posterior divisions (Figure 1). Block of each of these three fascicles produces clearly defined ECG patterns that can be recognized separately or in combination.

The pattern produced by right bundle branch block is familiar and is unaffected by subsequent block of either division of the left bundle. Block of the anterior division of the left bundle (left anterior hemi-block) produces late, superiorly oriented forces which deviate the frontal plane electrical axis to the left greater than  $-30^\circ$  – so called "abnormal left axis deviation" (Figure 2). Left posterior hemi-block, block of the posterior division of the left bundle, produces an axis shift to the right usually greater than  $+90^\circ$  (Figure 3). Block of this posterior division can be suspected when right axis deviation of this magnitude is found in patients over 40 with no evidence of right ventricular hypertrophy or extensive lateral infarction. Either of these two divisional blocks in the left bundle can be diagnosed in the presence of right bundle branch block since right bundle block does not alter the initial forces of ventricular activation.<sup>9</sup>

Combinations of these blocks – that is right bundle branch block with either left anterior or left posterior hemi-block – are forms of bilateral bundle branch block and signify that there is defective conduction in at least two of the three conducting fascicles. When bilateral bundle branch block is present, conduction is considered to be via the remaining fascicle. If, in addition to the bilateral bundle branch block, there is prolongation of the P-R interval, conduction may be slowed in the third fascicle as well (incomplete trifascicular block) (Figure 2). Interruption of this remaining fascicle would result in complete heart block or trifascicular block.

Patients with forms of bilateral bundle branch block have damage to their conducting system<sup>7</sup> and would be expected to have an increased incidence of subsequent

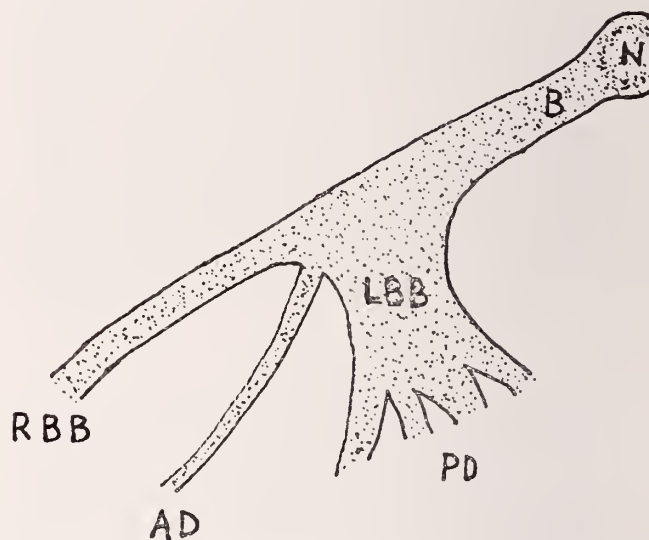


Fig. 1. Schematic drawing (after Rosenbaum) of the divisions of the conducting system.

N–A-V Node PD–Posterior Division of Left Bundle  
B–Bundle of His AD–Anterior Division of Left Bundle  
LBB–Left Bundle Branch RBB–Right Bundle Branch

complete heart block. In addition, patients with complete heart block may pass through a premonitory phase of bilateral bundle branch block prior to the development of complete heart block. This review was undertaken to determine how many of our patients with heart block and syncope had prior ECG evidence of conduction defects and, if so, what those defects were.

## MATERIAL AND METHODS

At Eastern Maine Medical Center since 1968 sixteen patients have required placement of a permanent cardiac pacemaker for the treatment of heart block and syncope. All patients had experienced recurrent syncope or disabling CNS symptoms for periods from 1 day to several years. In none of these patients did the heart block occur in context of an acute myocardial infarction. The records of these patients were examined with particular reference to the electrocardiographic patterns present prior to the onset of complete heart block. The criteria for right bundle branch block, left anterior and posterior hemi-block were those generally accepted.<sup>3</sup> Right bundle branch block was defined as a QRS interval of 0.12 sec. or more with an rSR' or RsR' complex in the right precordial leads. Left anterior hemi-block was reserved for QRS axis deviation in the frontal plane superior and to the

\*From the Cardiology Section of the Medical Service, Eastern Maine Medical Center, Bangor, Maine 04401.



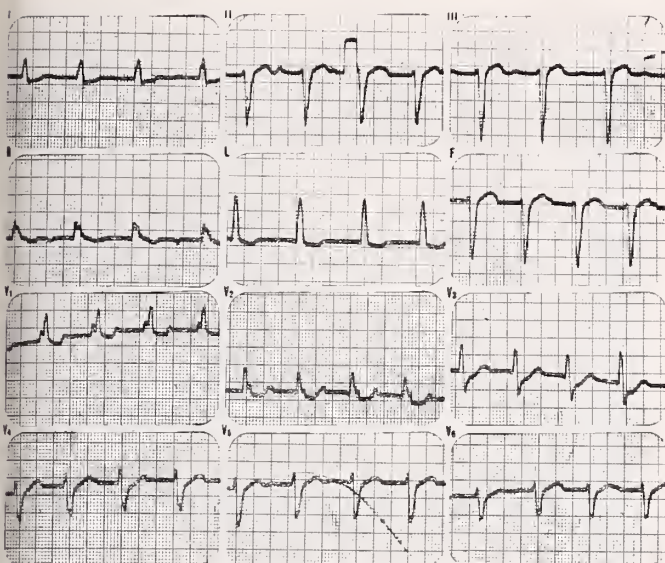


Fig. 2. Electrocardiogram demonstrating left anterior hemi-block manifest by the marked left axis deviation displayed in the standard leads. There is also complete right bundle branch block. Note also that there is prolongation of the P-R interval. (see text)

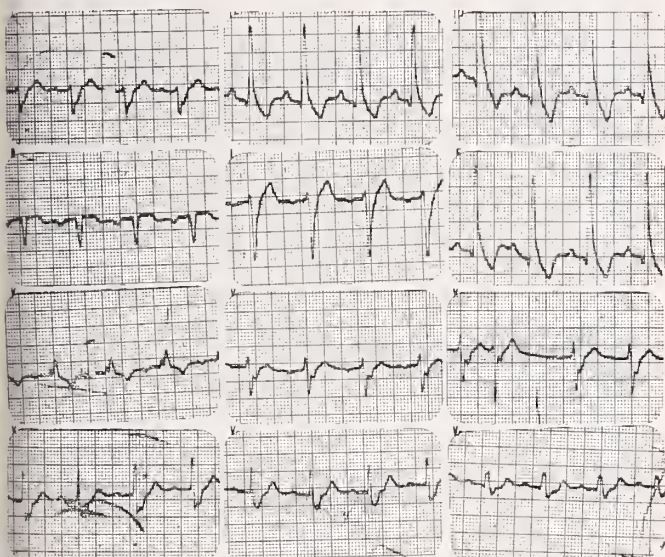


Fig. 3. Electrocardiogram demonstrating block of the posterior division of the left bundle—left posterior hemi-block—manifest by right axis deviation displayed in the standard leads. There is also right bundle branch block.

left of  $-30^\circ$  with initial R waves in leads II, III, and aVF. For left posterior hemi-block, criteria included frontal plane axis of  $+90^\circ$  or greater with initial Q waves in III and aVF, and no evidence of right ventricular hypertrophy or extensive lateral infarction.

#### RESULTS (TABLE 1)

Sixteen patients were reviewed. In one instance, pacing was required for atrial fibrillation with high degree of block of the left bundle branch block type. In one pa-

TABLE 1

CLINICAL AND ELECTROCARDIOGRAPHIC DATA				
Patient	Sex	Age	Symptoms	Electrocardiogram Prior To Complete Heart Block
T. P.	M	72	Syncope 1 Day	Complete A-V Block With Normal QRS *
A. J.	F	90	Syncope 1 Month	Complete A-V Block With Normal QRS *
L. J.	M	62	Syncope 2 Months	Right Bundle Branch Block and LAH
S. C.	M	68	Syncope 1 Year	1st Degree A-V Block
J. D.	M	62	Syncope 2 Years	Right Bundle Branch Block and LPH and 1st Degree A-V Block
I. H.	F	62	Syncope 1 Year	Right Bundle Branch Block and LAH and 1st Degree A-V Block
J. P.	M	83	Syncope 2 Days	Right Bundle Branch Block and LAH
E. L.	F	73	Syncope 2 Months	Atrial Fibrillation with Left Bundle Branch Block
G. J.	F	76	Syncope 4 Days	Complete A-V Block with Normal QRS *
E. H.	M	68	Syncope 10 Years	Right Bundle Branch Block and LAH and 1st Degree A-V Block
M. C.	F	77	Dizziness 2 Days Syncope 6 Months	Right Bundle Branch Block and LPH
L. S.	M	81	Syncope 3 Days	Right Bundle Branch Block and LAH and 1st Degree A-V Block
E. M.	F	66	Dizziness 1 Week Syncope 1 Day	Right Bundle Branch Block and LAH
S. R.	F	70	Syncope 1½ Years	Right Bundle Branch Block and LPH
L. S.	M	61	Syncope 6 Months	RBBB and LAH
K. W.	F	80	Syncope and Dizziness 6 Years	2:1 A-V Block With Normal QRS

LAH—Left Anterior Hemi-block

LPH—Left Posterior Hemi-block

\*No earlier tracing available

tient, the ECG prior to complete heart block showed only 1° AV block, in another 2° AV block (2:1). In three patients, the earliest recorded tracing showed complete AV block presumably originating in the AV node or bundle since the QRS interval was within normal limits.

In ten of the sixteen patients, however, bilateral bundle branch block was present at sometime before the onset of complete heart block, in some cases for months. The bilateral bundle branch block took two forms. The most frequent form was the combination of right bundle branch block and block of the anterior division of the left bundle. This latter block is referred to as left anterior hemi-block (or left superior block) and results in abnormal left axis deviation (Figure 2). This combination of right bundle branch block and left anterior hemi-block was present in seven of our patients. The second form of bilateral bundle branch block recognized in these patients was right bundle branch block combined with left posterior hemi-block and this was present in three of the patients with bilateral bundle branch block. Four of the patients with bilateral bundle branch block had pro-



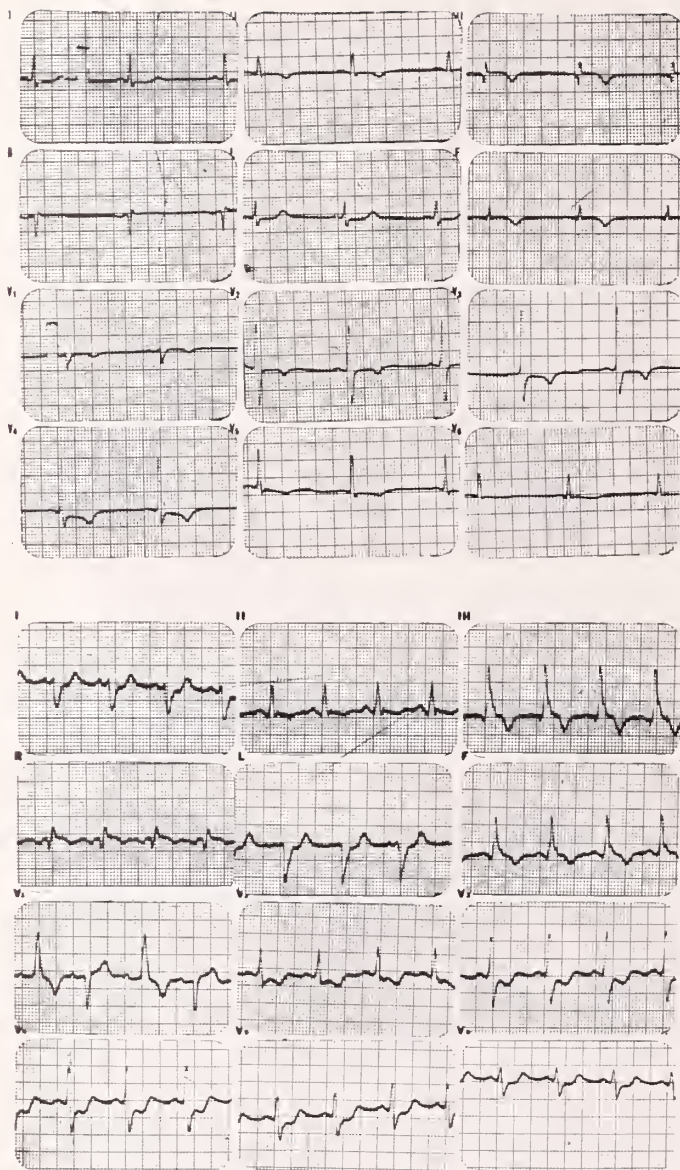


Fig. 4. In the top tracing (10-16-70) the conduction is normal. In the bottom tracing (1-10-71) left posterior hemi-block has developed. There is also right bundle branch block which is intermittent in lead V-1.

longed P-R interval as well. In these four patients, there was *complete* block of two fascicles and probably *incomplete* block in the third (incomplete trifascicular block). If so, this is a higher degree of block than bilateral bundle branch block. In some patients, increasing degrees of conduction block developed progressively (Figure 4). In other patients, various degrees of block of one or more of the fascicles was transient before it became complete (Figure 5).

#### COMMENT

Bilateral bundle branch block, rather than block in the AV node or common bundle, seems to be the most common electrocardiographic harbinger of complete

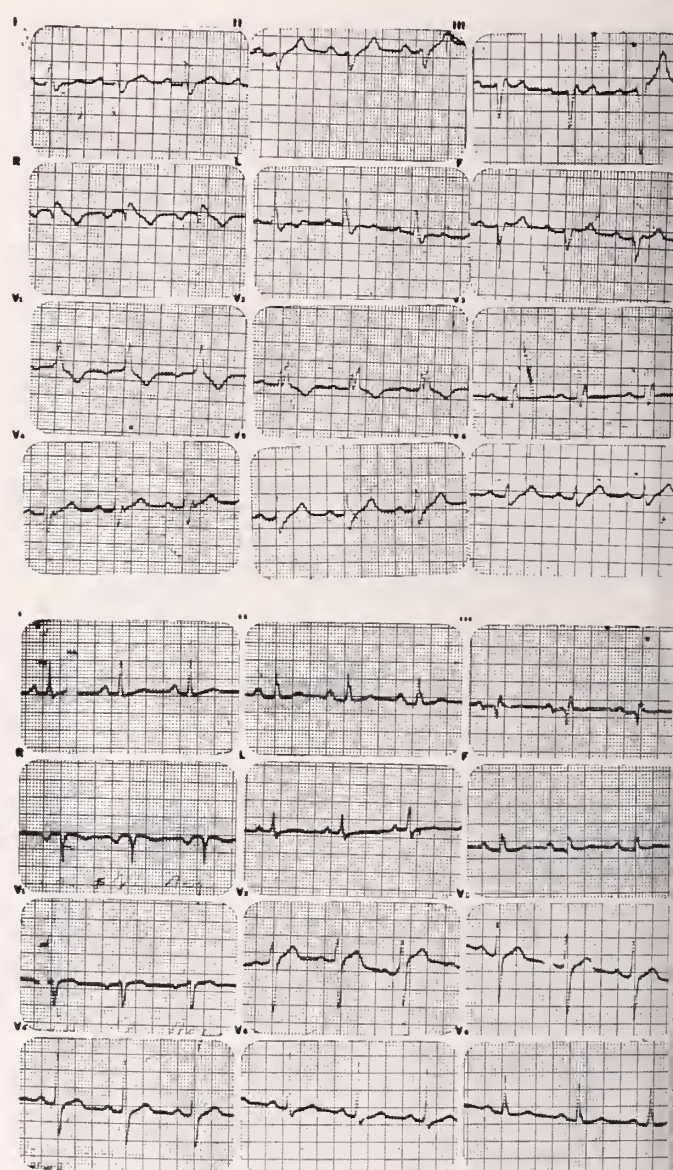


Fig. 5. Top tracing (1-1-71) there is right bundle branch block and left anterior hemi-block. In the lower tracing, 5 days later, (1-6-71) the bilateral bundle branch block is no longer present.

heart block. Some form of bilateral bundle branch block was present in ten of our sixteen patients (60%) at some time before the development of complete heart block. Other studies have produced similar results. Scanlon et al followed 209 patients with bilateral bundle branch block for periods up to 2 years and in that time 36 of these patients (14%) developed complete heart block.<sup>3</sup> In one group of Rosenbaum's patients with bilateral bundle branch block — those with right bundle branch block and left posterior hemi-block — 75% subsequently developed complete heart block.<sup>5</sup> Kulbertus and Calligan studied 31 patients in whom ECG's were recorded before the development of complete heart block. In 16 of these patients (51%), some form of bilateral



bundle branch block antedated complete block.

Based on the trifascicular concept, there are several types and combinations of conduction block possible. The reported frequency of these types of conduction blocks varies. Left posterior hemi-block seems to be less common than block of the anterior division.<sup>3,9</sup> This variation can probably be explained by the anatomy of the conduction system and its blood supply. After leaving the A-V node, the His bundle follows the inferior rim of the membranous septum and at the anterior margin gives off the thicker left bundle branch before continuing forward as the right bundle branch. The left bundle then quickly divides into two divisions, the anterior and posterior, one to the region of each papillary muscle. The long thin anterior division runs under the aortic valve, across the left ventricular outflow tract and along the anterior septum where it shares its blood supply from the septal branches of left anterior descending artery with the right bundle branch. The shorter thicker posterior division fans out very quickly over the posterior surface of the left ventricle where it is believed to usually receive its blood supply, along with the common bundle and left bundle, from both the right coronary and the left circumflex branches.

From these anatomical relations, three things are apparent. First, the three fascicles are so arranged that they may be damaged independently. Second, the thinner, longer more vulnerable anterior division of left bundle is damaged more readily than the posterior. Third, damage to the anterior portion of the septum might be expected frequently to damage the right bundle branch and anterior division of the left simultaneously since they share this common territory and blood supply.

The frequency of subsequent complete heart block is greater when the preceding bilateral bundle branch block is the combination of right bundle branch block plus left posterior hemi-block rather than left anterior hemi-block.<sup>5</sup> The posterior division is so "protected" that block of this division implies more extensive myocardial damage. In addition, the tenuous anterior division, the only remaining fascicle in this case, may be subsequently interrupted by a relatively small additional lesion.

It is important to appreciate that before the block becomes complete, conduction may be intermittent in any combination of the three fascicles. Thus, there may be intermittent or transient left anterior hemi-block, left posterior hemi-block, complete left bundle branch block, right bundle branch block or combinations producing incomplete bilateral bundle branch block or incomplete trifascicular block (Figure 5). Patients with bilateral bundle branch block, therefore, may experience Stokes-Adams attacks which are due to intermittent or transient complete heart block. By the time they are examined, conduction may have been partially restored so the ECG shows one of the forms of bilateral bundle branch block rather than complete heart block.

The etiology of the bilateral bundle branch block in our patients was not known for certain. Only one autopsy has been performed and that showed scattered areas of

focal myocardial fibrosis. The usual histologic finding, especially in patients with right bundle branch block and left anterior hemi-block, seems to be fibrosis in the interventricular septum. In most reviews, this form of bilateral bundle branch block (RBBB and LAH) is seen most frequently in patients with ischemic heart disease and in patients with hypertension.<sup>3,5,6,9</sup> In Scanlon's series, 41% of the patients with right bundle branch block and left anterior hemi-block had coronary artery disease.<sup>3</sup> Of the 36 of Lasser's patients with bilateral bundle branch block for whom clinical data was available, 61% had arteriosclerotic heart disease manifest by myocardial infarction or angina, 25% had hypertension and 11% had aortic valve disease. Twenty-two percent of his patients had diabetes and 85% had cardiomegaly.<sup>1</sup> Nine of the 16 patients reported by Kulbertus had angina pectoris and/or arteriosclerosis and four were hypertensive.<sup>9</sup> In many patients, however, as emphasized by Lenegre, there is a non-specific "sclero-degenerative" process in the septum involving the conducting system without clear evidence of coronary artery disease.<sup>7</sup> Some cases are associated with idiopathic myocardial disease, alcoholic cardiomyopathy and Chagas disease, as well as certain congenital heart diseases.

#### CONCLUSION

Complete heart block is not always permanent but may be intermittent or transient. Patients may develop a transient complete heart block, have a Stokes-Adams attack and recover so that the pulse rate is normal at the time of a subsequent examination. Many of these patients with syncope due to intermittent complete heart block have electrocardiographic evidence of impaired intraventricular conduction between syncopal attacks and the presence of these conduction defects may be the only clue to the etiology of the syncope.

Ten of our sixteen patients (60%) who eventually required a permanent cardiac pacemaker for heart block and Stokes-Adams attacks had some form of bilateral bundle branch block *prior* to the development of permanent, complete heart block. The combination of right bundle branch block and left anterior hemi-block was the commoner form. Reasons for this are discussed.

A history of syncope or near-syncope, even in the absence of a slow pulse, should provoke a search for conduction defects. The finding of bilateral bundle branch block on ECG suggests that intermittent heart block may be the cause of the syncope which, in this age group, might otherwise be attributed to cerebrovascular disease.

Likewise, since bilateral bundle branch block appears to be a hazardous condition, patients with this degree of conduction delay should be followed very closely for signs of CNS dysfunction which may be due to transient complete heart block. For many of these patients, cardiac pacemakers are indicated.

#### ACKNOWLEDGMENT

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# Ulcerative Colitis and Pregnancy

PHILIP G. HUNTER, M.D.\*

The effects of pregnancy on the course of ulcerative colitis as well as the influence of ulcerative colitis upon pregnancy, has been a subject of discussion and concern for a considerable period of time. Likewise, the management and prognosis of the pregnant patient with ulcerative colitis, as well as the physician's advice with regard to future pregnancies, represent major points of interest to both physician and patient alike. This paper is concerned with the classification and relationship of ulcerative colitis and pregnancy and the manner in which this information may be applied to the care of these patients. Three case histories are presented in an effort to point out the varied presentations which ulcerative colitis may have with regard to the pregnant patient.

## CASE HISTORIES

*Case 1* – A 22-year-old patient presented to the hospital complaining of persistent bloody diarrhea, cramping abdominal pain, fatigue, anorexia, and a forty pound weight loss over the past eight months. Nine months prior to presentation she had delivered a normal, healthy, full term infant; the pregnancy had been normal and the delivery uncomplicated. Approximately three weeks post partum she developed diarrhea and abdominal pain, frequent bloody stools, tenesmus, and subsequent loss of appetite and fatigue. Although these symptoms persisted, the patient did not seek medical advice until eight months after the onset of her illness.

Physical examination revealed a pale, cachectic, chronically ill appearing white female. Abdominal examination revealed diffuse tenderness in both lower quadrants; the remainder of the examination was unremarkable. Sigmoidoscopy revealed a diffusely edematous, granular, friable mucosa with multiple ulcerations. Biopsy of rectal mucosa revealed severe inflammatory changes consistent with a diagnosis of ulcerative colitis. Barium enema revealed diffuse involvement of the entire colon with findings compatible with ulcerative colitis. The patient was placed on Azulfidine®, hydrocortisone enemas, antispasmodics, and Metamucil® and responded remarkably well.

Over the subsequent three months, she became asymptomatic and regained 25 pounds; her ulcerative colitis remains in remission.

*Case 2* – A 28-year-old patient who was three months pregnant and who had been previously well, presented to her obstetrician complaining of severe cramping abdominal pain and bloody diarrhea of approximately two weeks duration. Sigmoidoscopy revealed a diffusely bleeding rectal mucosa with ulcerations. Biopsy of rectal mucosa revealed an intense inflammatory reaction with multiple microabscesses, but without granuloma, consistent with a diagnosis of ulcerative colitis. The patient was begun on Azulfidine and hydrocortisone enemas, but failed to respond to this treatment. Prednisone® was initiated at a dose of 40 mg. per day and the patient improved somewhat over the subsequent three weeks. However, two months from the onset of her illness, she again relapsed and experienced a marked increase in abdominal pain and diarrhea which necessitated hospitalization. While hospitalized she continued to respond poorly to treatment and was begun on intravenous ACTH without significant improvement. Her condition deteriorated,

she remained febrile, required multiple transfusions, and presented a problem in electrolyte and acid-base balance. Because of the critical nature of the patient's illness, surgical intervention became necessary. After consultation with all physicians concerned and the patient and her family, it was elected to remove the pregnancy. The patient subsequently underwent hysterectomy with only minimal technical difficulty. The colon was left intact. Postoperatively the patient did well and within two weeks of her surgery she was markedly improved. Bleeding and abdominal cramps ceased and diarrhea was minimal. Within six weeks of her surgery, the patient was asymptomatic. She has had no evidence of recurrent disease over a three year follow-up period to date.

*Case 3* – A 38-year-old mother of three children first presented with abdominal cramping pain and bloody diarrhea at age 23 while in the first trimester of her first pregnancy. A diagnosis of ulcerative colitis was made by sigmoidoscopy and rectal biopsy. The patient was begun on Sulfathalidine® 1 gram four times a day. She responded to this mode of therapy and her diarrhea and abdominal pain were minimal throughout the pregnancy. Following an uncomplicated delivery of a normal infant, her symptoms subsided and within four weeks of her delivery she was asymptomatic; Sulfathalidine was discontinued shortly thereafter.

During the subsequent three years, she remained asymptomatic and was noted to have a normal appearing rectum by sigmoidoscopic examination. However, at age 26 she became pregnant for the second time and again during the first trimester developed abdominal pain and bloody diarrhea; a diagnosis of ulcerative colitis was made after sigmoidoscopic confirmation. She was placed on Sulfathalidine 1 gram four times a day and again responded to this therapeutic approach. Her pregnancy was unremarkable with a minimal of gastrointestinal complaints and within weeks following the delivery of a normal infant became asymptomatic; therapy was again discontinued.

After a period of two years, during which she experienced no symptoms or signs of inflammatory bowel disease, she became pregnant for the third time and almost immediately developed abdominal pain and bloody diarrhea. Again sigmoidoscopy confirmed the suspected ulcerative colitis and the patient was begun on Sulfisoxazole® 1 gram four times a day to which she responded well. During the pregnancy, she experienced only occasional bloody stool and diarrhea was minimal. She delivered a normal full term infant following which her gastrointestinal complaints subsided and she became asymptomatic within two months. Therapy was discontinued shortly thereafter. The patient was followed for a period of nine months since her third pregnancy and has been asymptomatic since this time. Several sigmoidoscopic examinations have revealed normal rectal mucosa. Barium enemas have shown normal colon without evidence of inflammatory disease. She has had no further pregnancies and has had no therapy for ulcerative colitis during this interval.

## DISCUSSION

### *Effect of Ulcerative Colitis Upon Pregnancy*

Numerous investigations into the effect of ulcerative colitis upon pregnancy have concluded that the pregnancy is largely unaffected by the colitis.<sup>1-3</sup> While the result of pregnancy on ulcerative colitis is often serious, the fetal mortality is hardly influenced by the disease, if at all.<sup>4</sup> Mild or moderate ulcerative colitis has no significant effect upon fertility or the viability of the fetus, nor does

\* From the Section of Gastroenterology, Department of Medicine, Eastern Maine Medical Center, Bangor, Maine 04401.



it increase the hazard of spontaneous abortion.<sup>1</sup> Most pregnancies lead to the delivery of a full term, healthy, normal infant. A rate of spontaneous abortion of approximately 6.5% has been noted,<sup>2</sup> but the activity of the colitis during the first two trimesters did not appear to predispose to abortion. Severe ulcerative colitis, however, as a result of the adverse effects of the inflammatory disease on the patient as well as his generally poor nutritional state, does appear to have a deleterious influence upon pregnancy.

#### *Effect of Pregnancy on Ulcerative Colitis*

As a means to a better understanding of the effect of pregnancy upon ulcerative colitis, Crohn provided a classification by relating the presence or activity of the ulcerative colitis to the pregnant state.<sup>2</sup> Four groups are thus defined within this classification:

- Group 1: Antecedent ulcerative colitis with pregnancy occurring during a quiescent stage of the disease.
- Group 2: Antecedent ulcerative colitis with pregnancy occurring during an active stage of the disease.
- Group 3: Acute ulcerative colitis developing for the first time during gestation.
- Group 4: Acute ulcerative colitis developing for the first time during the puerperium.

In Crohn's study of 110 women with 150 pregnancies, 74 of the pregnancies were classified in Group 1. Of these 74 pregnancies, 40, or 54% had a relapse of their ulcerative colitis, most relapses occurring during the first trimester. Thirty-eight of the pregnancies occurred in Group 2 of which 29 or 77% had their already active disease further increase in severity. There were 19 pregnancies that fell into Group 3 and an additional 19 pregnancies which occurred in Group 4.

Other workers, utilizing the above classification in their studies, have also provided information with regard to these relationships. With reference to Group 2, De Dombal,<sup>1</sup> citing a small group of patients, states that none of their patients seemed to have an exacerbation of their already active colitis. In larger series, Machella<sup>5</sup> found half of his patients deteriorated and MacDougall<sup>3</sup> found a third further relapsed during pregnancy or the puerperium. Combining all studies noted above, it appears that in 46% of those patients with active ulcerative colitis at the onset of pregnancy, there was a further relapse during the pregnant period. However, it must be further pointed out that a small number of patients actually improved after becoming pregnant. In fact, MacDougall<sup>3</sup> emphasized that ulcerative colitis, active at the time of pregnancy, is improved in almost half of the patients. Within Group 3, De Dombal found that the majority of his patients had the onset of their colitis during the first trimester, and that in most instances, the degree of inflammatory disease tended to be mild with only a few cases being severe. Conversely, in Group 4, De Dombal found that the most severe form of ulcerative colitis was seen in those patients whose symptoms began during the puerperium.

The occurrence of ulcerative colitis during the puerperium and the apparent increased severity of the disease when relapse occurs during this period recently has been suggested to be related to the levels of plasma cortisol after delivery.<sup>1</sup> Bayliss et al<sup>6</sup> has shown that plasma cortisol levels steadily rise during pregnancy and reach a peak toward the end of the third trimester, falling rapidly to pre-pregnancy levels shortly after delivery. The data of De Dombal reveals a decreasing incidence of relapse of ulcerative colitis during pregnancy with the lowest incidence occurring in the third trimester and the highest incidence during the puerperium. This information has suggested that plasma cortisol may progressively inhibit the inflammatory response during pregnancy, but because of its rapid fall after delivery, suddenly leaves the colon unprotected and uniquely susceptible to relapse of the ulcerative colitis. This event may well be akin to the often observed relapse of ulcerative colitis if steroid therapy is suddenly discontinued or withdrawn too rapidly.

Through the review and compilation of the studies mentioned thus far, several trends and observations have been pointed out by various authors. It appears that most pregnancies begin in the presence of an established inactive ulcerative colitis and approximately 50% of pregnancies are associated with a relapse of previously quiescent disease. It has been noted that the behavior of ulcerative colitis during one pregnancy is not a criterion of how it will act during subsequent pregnancies.<sup>4</sup> In general, however, when the disease is first manifested in the course of a pregnancy (Group 3) prognosis of the colitis becomes poorer with each succeeding pregnancy. It has also been noted that when the colitis remains quiescent throughout the pregnancy and the post partum period, it tends to run a rather favorable course in later years. Multiple pregnancies and their effect on ulcerative colitis follow no predictable course; however, rapid successive pregnancies appear to have a deleterious effect on the colitis and a somewhat increased incidence of spontaneous abortion. Probably a period of at least two years with ulcerative colitis in remission should elapse between pregnancies.

An important additional point must be made in attempting to assess the significance of pregnancy on ulcerative colitis. In the large study of De Dombal, he noted a total relapse rate during pregnancy and the puerperium of 45%. However, in a comparable group of patients with ulcerative colitis who were not pregnant, he found a relapse rate of 47% during the course of a one-year period. These observations led this group of investigators to the conclusion that a young woman with ulcerative colitis has about an even chance of having a relapse of her colitis during any given year whether she is pregnant or not.

Finally, most authors comment on the role of the emotional state of the patient before, during, and after pregnancy, her attitudes toward pregnancy, and the advent of a child, as playing a significant part in determining the

degree of severity the ulcerative colitis will follow during and/or after pregnancy. If the child is desired the likelihood of a full term, uncomplicated pregnancy is increased, while if the pregnancy is resented an exacerbation or aggravation is likely to occur. A woman's desire to complete her pregnancy appears to favorably influence the later course of the disease. Likewise, the course of the disease in the post partum period may also be influenced by the home situation and by the mother's approach to the added responsibilities of a new child.

#### MANAGEMENT AND TREATMENT

Diagnosis of ulcerative colitis during pregnancy may be accomplished in a similar fashion as one would approach the non-pregnant patient with the exception that radiographic studies should not be employed. Following a careful history and physical examination sigmoidoscopy and, if desired, mucosal biopsy may be performed. In the presence of a healthy, viable fetus, these procedures will not in any manner harm the pregnancy. Once a diagnosis has been established, treatment of the ulcerative colitis should be the same during pregnancy as would be utilized during the non-pregnant state. Corticosteroids, either locally in the form of enemas, or orally, may be used if indicated, as they do not appear to affect the course of the pregnancy nor the health of the fetus or infant. Likewise, poorly absorbed sulfonamides, sedatives, antispasmodics, and anti-diarrheal agents may also be used.

The aspect of treatment which has aroused the greatest controversy is the question of therapeutic abortion. Indeed, in Case 2 therapeutic abortion was carried out and appeared to favorably influence the course of the ulcerative colitis. However, De Dombal found that two of the three patients who had an abortion failed to improve leading him to not recommend therapeutic abortion for the purpose of treating the inflammatory disease of the bowel. Maddix has aptly stated that surgery should be directed at the diseased gastrointestinal tract and not at the normal reproductive system.

Definitive surgical procedures for the treatment of ulcerative colitis are not a contraindication to subsequent

pregnancy.<sup>6,7</sup> Total colectomy and ileostomy do not negate a successful pregnancy. There may be an increased tendency to prolapse of the stoma, bleeding of the stoma, and temporary partial obstruction but these do not represent major problems. The scarred perineum should not present an obstacle to the use of an outlet forceps delivery and an episiotomy. The presence of an ileostomy does not have a harmful effect on the pregnancy. Delivery should be vaginal and the indications for Cesarean section should be those of an obstetrical nature and not those of present or past gastrointestinal disease.

#### SUMMARY

The influence of ulcerative colitis upon pregnancy and the effects of pregnancy upon the course of ulcerative colitis are discussed. Three cases are presented which point out the variable manner in which ulcerative colitis may present in relationship to the pregnant state. A classification of the relationship of ulcerative colitis with respect to pregnancy is presented, and the statistical data and clinical observations which characterize each group within the classification are provided. The treatment and management of the pregnant patient with ulcerative colitis is also included.

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pacemaker implantations in these patients and who kindly allowed us to report his results.

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## —News From Blue Cross and Blue Shield—



### BCDS

The Blue Cross Data Service gets its name from its predecessor in Massachusetts. Originally developed as a part of Massachusetts Blue Cross, the program has recently moved to Maine and is now established as an independent data service. BCDS is controlled by an advisory board composed of data users, including the Maine Medical Association, the Maine Osteopathic Association, the Maine Hospital Association, Medical Record Librarians, Regional Medical Programs, and the Comprehensive Health Planning Agency. For the next year it will be funded by a national grant from Health Services Foundation to the Maine Hospital Association and by the Associated Hospital Service of Maine.

The concept behind BCDS is best stated as "less is more." In these days of rapidly growing administrative programs it often happens that auditors audit the audits and the statisticians keep statistics on statistics; for this reason BCDS is attempting to streamline the statistical end of the health industry. Specifically, with its patient abstract BCDS will collect "a minimum data set" prescribed by Health Services Foundation. Instead of having Health & Welfare, Area Planners, Associated Hospital Service, and the government all duplicating each others' efforts in collecting the same information, the service will hopefully gather this information once for all parties.

There are two major goals for the project. The first is to determine the uniformity with which data is being collected across the State of Maine. If definitions of patient information vary from hospital to hospital, then statewide statistics are useless as generalizations. Secondly, the usefulness of this minimum data set to data users will be investigated. The idea of a minimum data set was proposed at the Airline House Conference on Hospital Discharge Data, and has been reworked by several groups including Health Services Foundation, but it has never been tested in the field.

By releasing (all or part of) the data to Health and Welfare, Regional Medical Programs, the planning agencies, Associated Hospital Service, and the peer review groups, BCDS will be able to decide the usefulness of the different pieces of information in the specified data set to these groups. From this

study the uniform data set can be altered to fit the working needs of the State's data users.

One of the chief advantages of using BCDS as a discharge data system is that it pays for itself. Basically, it works as follows.

As individual patients are discharged, the medical record librarian fills out a patient abstract. The completed abstract describes the patient, notes the facilities used in his treatment, records all diagnoses and procedures, and describes his status upon discharge. There are actually 29 different pieces of information put up on computer memory. Abstracts are filled out for every discharge. Monthly they are sent to Portland and processed on Associated Hospital Service's computer. From this information a series of monthly and semi-annual listings are printed and returned to the hospitals. Thus, for her work the librarian receives discharge statistics and an index of all discharges cross-referenced by diagnosis. The latter piece saves her a significant amount of time previously spent on the hand-indexing necessary for JCAH accreditation.

Data users other than subscribing hospitals, after receiving a release from those hospitals, will also receive reports based on the information held in computer memory. Several uses for BCDS data are now being discussed. A patient origin study would be facilitated by the computer's record of the discharges from the 22 BCDS hospitals in the State. AHS will investigate the possibility of reducing paperwork by reimbursing both physicians and hospitals with the BCDS abstract. Health and Welfare is interested in developing statistics on Medicaid patients. Incidence of diagnoses and procedures per 1,000 population are of interest to many parties; Regional Medical Programs, peer review groups, and hospital utilization review committees are three probable users.

After the "minimum data set" has been tested and its usefulness is assessed, BCDS can rework its abstract to fit the needs of Maine data users. Thus, with a year's worth of in-the-field trials BCDS hopes to become a viable Data Service for the health industry in Maine and, equally important, should be making significant efforts to streamline the collection, processing, and use of statistics.



# *Maine Heart Association Notes*

20 Winter Street, Augusta, Maine



## Emotional Stress and Heart Disease

"... John Hunter (1728-1793) was aware that emotional stress threatens the patient with cardiac disease....

With emotional stress, the adrenals are stimulated to release adrenergic catecholamines and glucocorticoids. ... As the catecholamines increase the need of the myocardium for oxygen, the normal heart compensates by augmented blood flow. However, in the presence of coronary artery sclerosis or myocardial insufficiency, there may be failure of augmentation resulting in myocardial hypoxia. ... electrolyte imbalance aggravates the hypoxia, thereby creating a vicious circle. Equally, the imbalance disturbs cardiac conduction ... with consequent likelihood of arrhythmia, severe myocardial ischemia, or congestive heart failure.

Interest in the role of the emotions in the precipitation of congestive heart failure led Perlman et al to study 105 patients so afflicted and 50 control patients....

... As a consequence of their study, the authors concluded that emotional turmoil may indeed precipitate or aggravate congestive heart failure.

Cassem and Hackett reported experience with 441 consecutive patients admitted to a coronary care unit, 145 of whom were referred for psychiatric consultation. ... In order of frequency, the principal reasons for referral were anxiety, ... depression, ... and behavioral problems. ...

... only five of the referred patients died (3.4%), considerably fewer than the expected mortality of 12%. Methods of treatment included daytime tranquilizers and nighttime sedation ... careful ... explanations of the significance of myocardial infarction and the attending psychological stresses, environmental manipulation, bolstering optimism, confrontation for inappropriate behavior, and hypnosis in selected cases of anxiety.

These reports of experiences with cardiac patients afford valuable insights for primary care physicians. Anticipation of emotional stresses may enable prevention of aggravated illness by means of environmental manipulation or thoughtful counseling. So, too, may prompt intervention. In fact, a life may be saved.

Submitted by Jacob B. Dana, M.D., Maine Heart Association.  
Reference: Editorial — JAMA, Vol. 218, pages 89-90, 1971.

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*Annual Meeting Dates For Your 1972 Calendar . . .*

Maine Medical Association, June 11-13  
The Colony, Kennebunkport. Maine

American Medical Association, June 18-22  
San Francisco

# News, Notes and Announcements

## A Conference on the Application of Mass Spectrometry to Bio-Medical Problems

January 6-7, 1972  
Bowdoin College, Brunswick, Maine

Bowdoin College, Cleveland Hall, Room 109

January 6, 1972 – 2:00 P.M.

"The Emergence of Mass Spectrometry as a Technique in Organic and Biochemistry"

Klaus Biemann, Ph.D., Professor of Chemistry, Department of Chemistry, Massachusetts Institute of Technology, Cambridge, Massachusetts

January 6, 1972 – 3:00 P.M.

"Applications of Mass Spectrometry to the Study of Inborn Errors of Metabolism"

Sanford P. Markey, Ph.D., Assistant Professor of Pediatrics and Pharmacology, John F. Kennedy Child Development Center, University of Colorado Medical Center, Denver, Colorado

Bowdoin College, Wentworth Hall, Senior Center

January 6, 1972 – 7:30 P.M.

"Current Limitations in the Application of Mass Spectrometry to Bio-Medical Problems"

Henry Fales, Ph.D., Chief, Chemistry Section, National Heart Institutes, National Institutes of Health, Bethesda, Maryland

Bowdoin College, Cleveland Hall, Room 109

January 7, 1972 – 9:30 A.M.

"Application of Mass Spectrometry to Problems in Pharmacology"

Catherine Fenselau, Ph.D., Assistant Professor, Department of Pharmacology and Experimental Therapeutics, The Johns Hopkins University School of Medicine, Baltimore, Maryland

January 7, 1972 – 10:30 A.M.

"The Future of Mass Spectrometry"

Fred W. McLafferty, Ph.D., Professor of Chemistry, Department of Chemistry, Cornell University, Ithaca, New York

January 7, 1972 – 2:00 P.M.

Special Symposium on "The Application of Mass Spectrometry to Studies of Drug Metabolism"

Chairman: Dr. Floie Vane, Ph.D., Chemical Research Department, Hoffmann-LaRoche, Inc., Nutley, New Jersey

## Department of Health and Welfare Division of Child Health Clinic Schedule

### Orthopedic Clinics

Bangor – St. Joseph Hospital

9:00 a.m.: Jan. 27, Feb. 24, Mar. 23, Apr. 27, May 25, June 22, July 27, Aug. 24, Sept. 28, Oct. 26, Nov. 16, Dec. 28

Ellsworth – Maine Coast Memorial Hospital

9:00 a.m.: Mar. 16, June 15, Sept. 21, Dec. 21

Fort Fairfield – Community General Hospital

9:00 a.m.: Jan. 10, Mar. 13, May 8, July 10, Sept. 11, Nov. 13

Fort Kent – Peoples Benevolent Hospital

9:00 a.m.: Jan. 11, Mar. 14, May 9, July 11, Sept. 12, Nov. 14

Houlton – Aroostook General Hospital

9:00 a.m.: Jan. 13, Mar. 16, May 11, July 13, Sept. 14, Nov. 16

Lewiston – Central Maine General Hospital

9:00 a.m.: Jan. 21, Feb. 18, Mar. 17, Apr. 21, May 19, June 16, July 21, Aug. 18, Sept. 15, Oct. 20, Nov. 17, Dec. 15

Machias – Down East Community Hospital

9:00 a.m.: Feb. 18, May 26, Aug. 25, Nov. 17

Portland – Maine Medical Center

10:30 a.m.: Jan. 31, Feb. 28, Mar. 27, Apr. 24, May 29, June 26, July 31, Aug. 28, Sept. 25, Oct. 30, Nov. 27, Dec. 18

Presque Isle – A. R. Gould Memorial Hospital

9:00 a.m.: Jan. 12, Mar. 15, May 10, July 12, Sept. 13, Nov. 15

Waterville – Thayer Hospital

time scheduled by hospital: Jan. 3, Feb. 7, Mar. 6, Apr. 3, May 1, June 5, July 3, Aug. 7, Sept. 11, Oct. 2, Nov. 6, Dec. 4

### Cleft Palate Clinics

Portland – Maine Medical Center

10:00 a.m.: Feb. 8, May 9, Sept. 12, Nov. 14

### Cardiac Clinics

Bangor – St. Joseph Hospital

9:00 a.m.: Jan. 14-28, Feb. 11-25, Mar. 10-24, Apr. 14-28, May 12-26, June 9-23, July 14-28, Aug. 11-25, Sept. 8-22, Oct. 13-27, Nov. 10-17, Dec. 8-22

Portland – Maine Medical Center

9:00 a.m.: Jan. 7-14-21-28, Feb. 4-11-18-25, Mar. 3-10-17-24-31, Apr. 7-14-21-28, May 5-12-19-26, June 2-9-16-23-30, July 7-14-21-28, Aug. 4-11-18-25, Sept. 1-8-15-22-29, Oct. 6-13-20-27, Nov. 3-10-17-24, Dec. 1-8-15-22-29

### Preschool Children's Development Clinics

Lewiston – Central Maine General Hospital

9:00 a.m.: Jan. 10-24, Feb. 14-28, Mar. 13-27, Apr. 10-24, May 8-22, June 12-26, July 10-24, Aug. 14-28, Sept. 11-25, Oct. 9-16, Nov. 13-27, Dec. 11-18



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**Warning:** Not intended for treatment of pernicious anemia or other primary or secondary anemias. Neurologic involvement may develop or progress, despite temporary remission of anemia, in patients with pernicious anemia who receive more than 0.1 mg of folic acid per day and who are inadequately treated with vitamin B<sub>12</sub>.

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Waterville — Thayer Hospital

9:00 a.m.: Jan. 5-19, Feb. 2-16, Mar. 1-15-29, Apr. 5-19,  
May 3-17-31, June 7-21, July 5-19, Aug. 2-16-30, Sept. 6-  
20, Oct. 4-18, Nov. 1-15-29, Dec. 6-20

### Cystic Fibrosis Clinics

Bangor — St. Joseph Hospital

time scheduled by hospital: Jan. 18, Feb. 15, Mar. 21, Apr.  
18, May 16, June 20, July 18, Aug. 15, Sept. 19, Oct. 17,  
Nov. 21, Dec. 19

Lewiston — Central Maine General Hospital

time scheduled by hospital: Jan. 7, Feb. 4, Mar. 3, Apr. 7,  
May 5, June 2, July 7, Aug. 4, Sept. 1, Oct. 6, Nov. 3, Dec. 1

Portland — Maine Medical Center

time scheduled by hospital: Jan. 18, Feb. 15, Mar. 21, Apr.  
18, May 16, June 20, July 18, Aug. 15, Sept. 19, Oct. 17,  
Nov. 21, Dec. 19

### Future Meetings of the American College of Surgeons — 1972

#### Sectional Meetings:

MIAMI, FLORIDA, Jan. 17-19, Sheraton-Four Ambassadors

SYDNEY, AUSTRALIA, Jan. 27-29, Wentworth Hotel

ST. LOUIS, MISSOURI, Feb. 14-16, Chase-Park Plaza

PHILADELPHIA, PENNSYLVANIA, March 13-15, Bellevue-  
Stratford (Doctors-Nurses)

#### Clinical Congress:

58th Annual Clinical Congress. Oct. 2-6, SAN FRANCISCO

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## Necrologies

JOSEPH I. SMITH, M.D.

1901-1971

Dr. Joseph I. Smith, 70, prominent medical doctor in Bath, Maine for 41 years, died after a long illness on October 11.

Dr. Smith was born in Riga, Latvia on March 15, 1901, son of Samuel H. and Mira Mack Smith. He came to the United States as a small child, growing up in Brunswick, where he was graduated from Brunswick High School and Bowdoin College in 1923. During high school and college, Dr. Smith was outstanding in athletics. At Bowdoin, he played shortstop and third base on the baseball team and was captain his senior year. He was also quarterback on the football team, was twice named All-Maine Quarterback and was mentioned as All-American material. He was assistant football coach at Bowdoin in 1924.

He received his medical degree from Tufts University School of Medicine in 1929 and interned at the Somerville (Massachusetts) City Hospital. After taking a postgraduate course at Boston City Hospital, he accepted a position on the staff of Concord (New Hampshire) State Hospital, specializing in mental work. He was also connected with the pediatric department of the Boston City Hospital.

In 1930, Dr. Smith located in Bath and took over the practice of Dr. S. S. Mullin. He was appointed assistant acting surgeon for the U.S. Public Health Service relief station at Bath in 1935, served as the city's health officer for 12 years, resigning in 1944 when he was appointed Sagadahoc County Medical Examiner by the late Governor Sumner Sewall. He was also named examining physician when the Sagadahoc County Selective Service Board was created in 1940.

A member of the Maine Medical Association, member and past president of the Lincoln-Sagadahoc County Medical Society, he was vice president of the Bath Memorial Hospital medical staff for many years.

Surviving are his widow, the former Estelle Frances Orkin of Bath; two sons, Bladen R. and Dr. James O. Smith, both of Bath; one brother, Dr. Jacob Smith of Bath; three sisters, Mrs. Fanny Simpson of Trenton, New Jersey, Mrs. Leonard Chapman of Flint, Michigan and Mrs. Harry Young of North Windham; three grandsons and several nieces and nephews.

ELIOT T. STADLER, M.D.

1936-1971

Dr. Eliot T. Stadler, 35, of West Gouldsboro, Maine died at an Ellsworth hospital on September 10 following an accident.

He was born in Columbia, Missouri on July 21, 1936, son of Lewis J. and Cornelia T. Stadler.

Dr. Stadler was graduated from Antioch College in Ohio in 1959 and received his medical degree from Western Reserve University School of Medicine in 1963. He interned at the Ancker Hospital in St. Paul, Minnesota from 1963 to 1964 and then located in West Gouldsboro.

He was a member of the Hancock County Medical Society, the Maine Medical Association, the American Medical Association and was chief of staff at the Maine Coast Memorial Hospital in 1970.

Surviving are his mother of West Gouldsboro; one daughter, Miss Justine Stadler of Steuben; one sister, Mrs. Joan Martin of Ann Arbor, Michigan; four brothers, Tuckerman of New York City, Henry of Ann Arbor, Michigan, David of Seattle, Washington and Dr. John of Larchmont, New York and several nieces and nephews.

## County Society Notes

### LINCOLN-SAGADAHOC

The regular monthly meeting of the Lincoln-Sagadahoc County Medical Society was held at The Ledges in Wiscasset, Maine on September 21, 1971.

The meeting was called to order by the President, Dr. Frank O. Avantaggio, Jr. Dr. Paul A. Fichtner introduced Dr. Paul J. Killoran, of the M.M.A. Peer Review Committee, who spoke on the state of Peer Review in Maine. Dr. Hamdi Akar was appointed liaison member from Bath Memorial Hospital, Dr. Carl R. Griffin, Jr. from St. Andrews Hospital and Dr. Charles C. Morrison from Miles Memorial Hospital.

Dr. Peter A. Evans spoke on cardiac arrhythmias and their treatment.

The minutes of the May meeting were read and accepted without alteration.

There was no old business.

Dr. George W. Bostwick recommended that 1972 dues be kept at \$30.00 for this Society. A motion that the dues remain at \$30.00 was made by several, seconded by many and approved unanimously.

The request for transfer of Dr. Robert S. Galen from Cumberland County to this County Society was reported as approved by the Censors. The recommendation was accepted unanimously by the members present.

Dr. Bostwick reported that applications by Drs. Peter McGuire and Elihu York have not yet been received by the Censors.

The meeting was adjourned at 10:15 p.m.

GEORGE W. BOSTWICK, M.D., *Secretary*

### PISCATAQUIS

The meeting of the Piscataquis County Medical Society was called to order on September 15, 1971 at 8:50 p.m. at Dr. Linus J. Stitham's Sebec Camp.

Dr. Thornton W. Merriam, Jr., Director of District 8, which consists of Penobscot and Piscataquis Counties, informed us of the changes to be made by the formation of Districts which will consist of a combination of County Societies. Directors of each District would be elected by the House of Delegates. The County Societies would still function as county societies, and would still have two delegates in the House of Delegates. There was discussion about these changes. Dr. Stitham felt that the Maine Medical Association would function better with these changes, and most important, that Presidents of the Maine Medical Association would be elected because they deserve the election.

A letter was read from Dr. Hanley in reference to the appointment of a Peer Review Committee in each county. Mr. Weston Pierce of the Associated Hospital Service of Maine explained the function of the Peer Review Committee in each county. It would cost about 35 cents to review each case by Blue Cross. However, the cost would be refunded by Blue Cross and Medicare as a charge for care of the patient. After analysis of the cases, the results would be sent to the Peer Review Committee of the county for consideration. It was felt that this would provide better quality medical care for all patients. It was hoped that commercial insurance companies would accept the idea of Peer Review Committees. Drs. Curtis, Howard and Cornell were appointed to the Peer Review Committee of Piscataquis County. The names of the members of the Peer Review Committee of Piscataquis County were to be sent to the Maine Medical Association and to Mr. Pierce of the Associated Hospital Service of Maine in Portland.

Dr. Stitham moved that a card of sympathy be sent to Dr. Wyman, also that the Piscataquis County Medical Society contribute \$10.00 to the Maine Medical Education Foundation in the memory of Mrs. Edwin Wyman. Mrs. Stitham would take care of sending the cards. This motion was passed.

*Continued on Page 305*



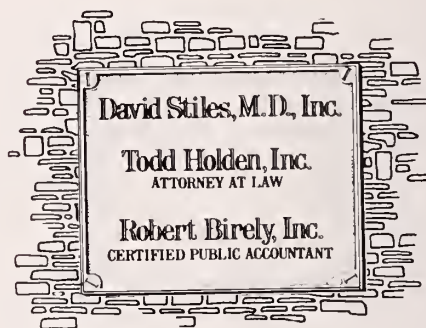


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**INDICATIONS:** All cases of hypertension except the mildest and the most severe.

## CONTRAINDICATIONS

**Reserpine:** Known hypersensitivity; mental depression, especially with suicidal tendencies; active peptic ulcer; ulcerative colitis.

**Hydralazine:** Hypersensitivity; coronary artery disease; mitral valvular rheumatic heart disease.

**Hydrochlorothiazide:** Anuria; progressive renal or hepatic disease; allergy to thiazides or other sulfonamide-derived drugs.

## WARNINGS

**Reserpine:** Withdraw reserpine 2 weeks before surgery, if possible. For emergency surgical procedures, give vagal blocking agents parenterally to prevent or reverse hypotension and/or bradycardia.

Electroshock therapy should not be given to patients receiving rauwolfia preparations, since severe and even fatal reactions have been reported. Discontinue for 2 weeks before giving electroshock therapy.

**Hydralazine:** Hydralazine, particularly if given for prolonged periods, may produce an arthritis-like syndrome, leading in rare instances to a clinical picture simulating acute systemic lupus erythematosus. Most of these reactions are reversible upon withdrawal of therapy. These side effects are not anticipated even with maximal recommended dosage of Ser-Ap-Es.

**Hydrochlorothiazide:** Small bowel stenosis, with or without ulceration, has been associated with use of enteric-coated thiazides with potassium, and with enteric-coated potassium alone. Coated potassium should be used only when dietary supplementation is not practical and discontinued if gastrointestinal symptoms arise.

Pay special attention to electrolyte balance of patients with severe renal or hepatic insufficiency. In patients with cirrhosis and ascites, watch for symptoms of impending hepatic coma. Thiazides may decrease glucose tolerance; use cautiously in diabetics. Hyperuricemia may occur but is generally reversed by a uricosuric agent. Lowering of blood pressure may sometimes result in nitrogen retention, particularly in patients with impaired renal function. Dosage titration is necessary in such patients. Thiazides may decrease arterial responsiveness to norepinephrine and increase responsiveness to tubocurarine; if possible, withdraw therapy two weeks prior to surgery. Hypotensive episodes under anesthesia have been observed. If emergency surgery is indicated, preanesthetic and anesthetic agents should be administered in reduced dosage.

The possibility of sensitivity reactions should be considered in patients with a history of allergy or bronchial asthma.

## Use in Pregnancy

**Reserpine:** The safety of rauwolfia preparations for use in pregnancy or lactation has not been established; therefore, this drug should be used in pregnant patients only when, in the judgment of the physician, its use is deemed essential to the welfare of the patient.

**Hydralazine:** Although there has been no adverse experience with hydralazine in pregnancy, there have been no systematic animal reproduction studies to support the

idea of safety in pregnancy. The drug should be used in pregnancy only when, in the judgment of the physician, it is deemed essential to the welfare of the patient.

**Hydrochlorothiazide:** Thiazides should be used with caution in pregnant or lactating patients since this drug crosses the placental barrier and appears in breast milk and may result in fetal hyperbilirubinemia, thrombocytopenia, or altered carbohydrate metabolism. It is therefore possible that the adverse reactions seen in the adult may occur in the newborn.

## PRECAUTIONS

**Reserpine:** Use cautiously in patients with history of peptic ulcer, ulcerative colitis, or other GI disorders. May precipitate biliary colic in patients with gallstones.

Discontinue at first sign of mental depression, keeping in mind possibility of suicide. Use with extreme caution in those with history of mental depression. Take special care with asthmatics and in hypertensives with renal insufficiency. Use cautiously with digitalis, quinidine, and guanethidine. Not recommended for aortic insufficiency.

**Hydralazine:** Use cautiously in suspected coronary artery disease, cerebral vascular accidents, and advanced renal damage. Peripheral neuritis, evidenced by paresthesias, numbness, and tingling, has been observed. Published evidence suggests an antipyridoxine effect and addition of pyridoxine to the regimen if symptoms develop. Blood dyscrasias, consisting of reduction in hemoglobin and red cell count, leukopenia, agranulocytosis, and purpura, have been reported rarely. If such abnormalities develop, discontinue therapy.

Periodic blood counts and liver function tests are advised during prolonged therapy.

**Hydrochlorothiazide:** Monitor indicated blood chemistry and fluid and electrolyte balance carefully in patients on thiazide therapy, especially when patient is vomiting, receiving parenteral fluids, steroids, or digitalis. Supplemental potassium and non-rigid salt intake will help prevent hyponatremia, hypochloremic alkalosis, and hypokalemia.

## ADVERSE REACTIONS

**Reserpine:** Increased salivation, increased gastric secretions, nausea, vomiting, anorexia, aggravation of peptic ulcer or ulcerative colitis, increased intestinal motility, diarrhea, angina-like syndrome, ectopic cardiac rhythms particularly when

used concurrently with digitalis, bradycardia, flushing, and mental depression, drowsiness, lassitude, nervousness, paradoxical anxiety, nightmares (which may be an early sign of mental depression), rarely atypical Parkinsonian syndrome, central nervous system sensitization (manifested by dull sensorium, deafness, glaucoma, uveitis, and optic atrophy), pruritus, skin rash, dryness of mouth, dizziness, headache, syncope, epistaxis, purpura due to thrombocytopenia, asthma in susceptible persons, nasal congestion, weight gain, impotence or decreased libido, enhanced susceptibility to colds, dysuria, conjunctival injection, dyspnea, muscular aches.

**Hydralazine: Common:** Headache, palpitations, anorexia, nausea, vomiting, diarrhea, tachycardia, angina pectoris.

**Less frequent:** Nasal congestion; flushing; lacrimation; conjunctivitis; paresthesias; edema; dizziness; tremors; muscle cramps; psychotic reactions characterized by depression, disorientation, or anxiety; hypersensitivity reaction including skin rash and vascular collapse; constipation; difficulty in micturition; arthralgia; dyspnea; paralytic ileus; lymphadenopathy; splenomegaly.

**Hydrochlorothiazide:** Anorexia, gastric irritation, nausea, vomiting, cramping, diarrhea, constipation, jaundice (intrahepatic cholestatic), pancreatitis, hyperglycemia, glycosuria, dizziness, vertigo, paresthesias, headache, xanthopsia, purpura, photosensitivity, rash, urticaria, necrotizing angitis, leukopenia, thrombocytopenia, agranulocytosis, aplastic anemia, muscle spasm, weakness, restlessness. Orthostatic hypotension may occur and may be potentiated by alcohol, barbiturates, or narcotics. Whenever adverse reactions are moderate or severe, reduce dosage or withdraw therapy.

**DOSAGE:** One or 2 tablets t.i.d. To initiate therapy, 1 tablet t.i.d. is recommended. For maintenance, adjust dosage to lowest patient requirement. When necessary, more potent antihypertensives may be added gradually in dosages reduced by at least 50 percent.

**SUPPLIED:** Tablets (salmon pink, dry-coated), each containing 0.1 mg reserpine, 25 mg hydralazine hydrochloride, and 15 mg hydrochlorothiazide; bottles of 100 and 1000.

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hydralazine hydrochloride	25 mg
hydrochlorothiazide	15 mg

# C I B A



Dr. Charles H. Lightbody stated that the Maine Medical Education Foundation was using some capital for student loans. He said that only 49% of Doctors of the Maine Medical Association had contributed to the Foundation. He urged that all contributions be sent to the Foundation, P. O. Box 250, Brunswick, Maine 04011.

Dr. Stitham and Dr. Lightbody were appointed as the nominating committee for new officers for 1972.

The following slate of officers was presented and elected:

President: Dr. Isaac Nelson, Greenville

Vice-President: Dr. George C. Howard, Guilford

Secretary-Treasurer: Dr. Robert C. Cornell, Greenville

Delegate to the M.M.A. House of Delegates: Dr. Charles H. Lightbody, Guilford. Alternate: Dr. John B. Curtis, Milo

Board of Censors: Drs. Harvey C. Bundy, Rumford, Francis W. Bradbury, Dover-Foxcroft and Norman H. Nickerson, Greenville

Legislative Committee: Drs. Araminta M. Rodriguez, Milo and Charles H. Lightbody, Guilford

The next meeting, if possible, will be held before Thanksgiving.

Meeting adjourned at 9:50 p.m.

ISAAC NELSON, M.D., *Secretary*

### CUMBERLAND

The 361st meeting of the Cumberland County Medical Society was held at the Purpoodock Club, Cape Elizabeth, Maine on the afternoon of September 16, 1971. This meeting represented the third annual outing and a good time was enjoyed by all present. There was a golf tournament in which 20 members of the Society participated. Low gross was won by Dr. Douglas R. Hill with low net honors being shared by Drs. John T. Libby and Stephen E. Monaghan. At 4:30 p.m., there was a lively game of softball between the House Officers and the Staff. The game was very close, the House Officers eking out a 24-7 victory. The excellent umpiring of Dr. Maurice Van Lonkhuyzen received many comments. The eight cases of beer were consumed by the membership and an excellent dinner was enjoyed by all. The dinner consisted of lobster tails, fried chicken, roast beef, lobster newburg, potato salad and delicious dessert. There were 76 members and 7 House Officers in attendance.

The business meeting was called to order after dinner. The second reading of Dr. Newell A. Augur's application for membership was undertaken, following which Dr. Augur was duly voted into membership by the members present. Two new applications were received into membership, those of Drs. Frank W. Read and Brian Gottlieb; both of these doctors had letters of transfer from their previous Societies in order and they were voted into membership.

First readings of several applications for membership were then noted by the Secretary. Those were Drs. Adair Heath, William Young, Roger Southall, Kenneth Doil and Darrell Thorpe.

Announcement was made of the next meeting to be held at the Union Mutual Building in Portland on October 21, 1971.

There being no further business, the meeting was adjourned by the President, Dr. Lawrence Crane.

The 367th meeting of the Cumberland County Medical Society was held on October 21, 1971. The place of the meeting was the Unionmutual Life Insurance Company in Portland, Maine. The Unionmutual Life Insurance Company had agreed to host the Cumberland County Medical Society on this particular date in order that all the doctors might gather and be made aware of some of the problems associated with Medicare. There was a Social Hour, and then a Roast Beef Buffet dinner held in the splendid surroundings of the Unionmutual Life Insurance Company's main dining cafeteria. It was enjoyed by 75 members and guests of the Society. The dinner, topped off with pie, ice cream, and cheese, was followed by the program commencing at approximately 8:00 p.m.

The program was introduced by the President, Dr. Lawrence Crane, who was followed by Mr. David Williams of Medicare. Mr. Williams introduced Miss Pat Googins and Miss Susan Murphy who talked on different aspects of the Medicare program; Miss Googins speaking on how fees are set and how a profile for a physician is established, Miss Murphy speaking on the actual completion of the Medicare forms. Mr. Williams then spoke on the actual establishment of the M.D.'s profile which was followed by a lively question-answer period that was very beneficial and constructive, both to the physicians present and to the Medicare people. The program was well received.

Following the program, a brief business meeting was held. Dr. Jeremy R. Morton was voted a member of the Society by letter of transfer from his previous society in Texas. Five new applications were read for the second time and they were voted into the Society. These members were Drs. Kenneth L. Doil, William J. Young, Rogers C. Southall, Gordon A. Heath and Darrell P. Thorpe. The application of a new physician was read for the first time, that of Dr. Daniel C. Bryant. Dr. Bryant served his residency at the Maine Medical Center in Portland from 1966-1969. His application was referred to the proper committee and will be read again at our next meeting.

An announcement was made of the Westbrook College program being undertaken in January 1972 in which girls of the Medical Assistants course are given an internship in a doctor's office. All doctors interested should call the College or the Secretary of Cumberland County Medical Society.

It was announced that the Tasting Supper put on by the Woman's Auxiliary to the Cumberland County Medical Society will be November 5, 1971.

Dr. Clement A. Hiebert spoke on the Radio Paging system. The system has been previously examined by the Maine Medical Center and recently the Executive Committee decided that they had neither the funds nor the time nor the place available to undertake such a program. Dr. Hiebert introduced the idea to the Society and it was felt that it possibly would have some merit and be something that the Society or the Southern Maine Comprehensive Health Program might undertake. Only introductory remarks were made and no follow-up was anticipated at this time.

There being no other business, the meeting was adjourned at 9:30 p.m.

DOUGLAS R. HILL, M.D., *Secretary*

### ANDROSCOGGIN

The meeting of the Androscoggin County Medical Association was held at St. Mary's General Hospital in Lewiston, Maine on September 17, 1971. The meeting was opened at 8:35 p.m. by the Vice-president, Dr. Thomas F. Shields, with 10 members present.

Dr. Wilfrid A. Cloutier, peer review chairman for the County, reported on the Illinois Medical Journal of March 1970. He presented the outline, to be printed, each member to peruse them and see if Androscoggin County will accept this type of format, then a permanent committee.

Dr. John W. Carrier reviewed the June Maine Medical Association meeting: Dr. Bostwick, Speaker of the House; Dr. Miragliuolo, Vice Speaker. Hancock County resolution was defeated. Dr. Hill's resolution passed (allied ophthalmological health services). Thayer Hospital resolution passed. Dr. George W. Wood, III elected President-elect and delegate to AMA; Dr. Richard P. Laney, alternate. Franklin County Health plan report read by Dr. David C. Dixon. Medical School without walls report by Dr. Hanley.

Dr. Louis N. Fishman's committee met in May: letter and recommendations to be reproduced and sent to the membership. Tabled until next meeting.

It was moved and voted that the County Society write a letter to the Associated Hospital Service of Maine, urging that all subscribers be notified of all the new rules and regulations regard-

ing restrictions on hospitalization.

Dr. Jan Knoppers accepted the diabetic week chairmanship. Meeting adjourned 10:05 p.m.

The meeting of the Androscoggin County Medical Association was held at the Central Maine General Hospital in Lewiston, Maine on October 21, 1971. The meeting was opened by Dr. Thomas F. Shields, Vice President, with 18 members present.

The minutes of the September meeting were approved as read.

Drs. Nancy S. Horie, Tsukasa Horie, Otis P. Tibbetts and Gilbert E. Marcotte were elected to active membership.

Mr. Fred Howard of the Associated Hospital Service of Maine explained the present utilization review. At present, the utilization of all Blue Cross patients is in the educational phase only.

Guidelines on admission diagnosis: at present this information in hands of State Peer Review Committee for review, recommendations and possible changes. If a claim is held back after review by Associated Hospital Service reviewer, it goes to Hospital committee, District committee and State Peer Review Committee. If Peer Review feels AHS has made a wrong decision, then the AHS will pay and be bound by the decision of these committees.

A lengthy question and answer period followed. Dr. Shields thanked Mr. Howard on behalf of the Society.

The revised meeting schedule as presented by Dr. Fishman's committee was reviewed. After some discussion, it was moved and seconded to vote on the question, Fourteen (14) FOR, Two (2) AGAINST. This schedule will not start until January 1972. Meeting adjourned at 9:35 p.m.

DONALD L. ANDERSON, M.D., *Secretary*

#### KNOX

The meeting of the Knox County Medical Society was held on October 5, 1971 at the Sail Loft in Rockport, Maine.

The minutes of the September meeting were read and accepted. The treasurer reported that \$302.83 is in the treasury.

Dr. John S. Hopping was voted as a member. His letter of transfer was received from the Ohio State Medical Association. Dr. H. Stanley Warren was voted full membership on his letter of transfer from the Connecticut State Medical Association. This letter was received in May but through an oversight was not brought to the attention of the Society until today. Dr. Henry R. Hardy was voted full membership. He had been a full member until he withdrew in April. Dr. William McLellan was voted full membership. He was a junior member for the past two and one-half years while in residency.

*Communications:* A letter from Mr. Richard H. L. Sexton was read, thanking us for the resolution that was passed at the September meeting thanking him for a fine job as President and Acting Director of the Penobscot Bay Medical Center.

The notice of the fall meeting of the House of Delegates on December 5, 1971 was read. Members were encouraged to volunteer their services for the various committees. The physicians were asked to contact Dr. Nuesse and their names will be submitted to the State Medical Association.

*Old Business:* Dr. Henry O. White stated that Mr. Richard Sawyer, a lawyer who advised the Penobscot Bay Medical Associates, has been paid in part by money from the OEO grant. Mr. Sawyer very graciously discounted the remainder of his bill. Mr. Jefferson Ackor was thanked by Dr. White for handling this transaction.

*OEO Status:* A new building has been planned which will be located next to Knox County General Hospital and construction will get under way soon. The new program for the OEO patients should be ready for opening by April 1, 1972. Dr. White again emphasized that this will be an experimental program. Under the OEO grant, a full-time physician should be hired and a new physician in this area, Dr. Philip Groce, is interested in working in the OEO program. He is also interested

in working under the "Sanazaro" grant and collecting health data. It was mentioned that many of the physicians who had questions about the OEO program, met on October 1, 1971 with Drs. White and Killoran, and after all questions were answered, they voted to support the OEO concept.

Dr. White asked for a supporting vote of confidence of the Board of the Penobscot Bay Medical Associates. He felt that the entire Knox County Medical Society should be made aware of the actions of the Board and would, hopefully, support their actions. A motion by Dr. Eddy, stating that the Knox County Medical Society supports the actions of the Board of the Penobscot Bay Medical Associates was made and seconded and passed by unanimous vote.

*New Business:* Dr. Morse has arranged for a speaker for next month's meeting.

The meeting was then turned over to Dr. Killoran who is the Knox County Medical Society's Representative on the State Peer Review Board. He introduced Dr. Euclid M. Hanbury, Jr. from Belfast who is actively involved in the State Peer Review Committee and he gave a very interesting discussion of the reasons why a State Peer Review Committee, along with local and district committees, are being formed. He stressed that the insurance companies will sign a contract with the Review Committee to agree to final arbitration by the Committee on disputed claims. Dr. Hanbury and Dr. Killoran felt that this would be an improvement over the present method where many of these decisions are made by a third-party physician. Dr. Hanbury stated that there are two aspects to Peer Review, one will be a Grievance Committee and the other will be a Claims Review Committee. On questioning by Dr. Giustra, Dr. Hanbury felt that the Knox County Medical Society should immediately form a local Peer Committee. Dr. White, along with the Executive Committee of the Knox County Medical Society, will meet and pick members for this committee.

The meeting was adjourned.

WILLIAM E. NUESSE, M.D., *Secretary*

#### HANCOCK

The 436th Hancock County Medical Society meeting was held on October 13, 1971 at Jasper's Restaurant in Ellsworth, Maine, with six members and three guests present.

An informative talk by Mrs. Elizabeth Spruce, R.N. discussed the proposed Homemaker Health Aid Service from the Counseling Center in Bangor to be started in Hancock County in 1972 for low income homes. Mention was made of a possibility of a pediatric physician's assistant for this region if desired by 1973. Funding problems for additional health aids might be dealt within the county by generating a demand for more services and requesting matching funds from the Bureau of Human Relations, a private organization with headquarters in Portland.

Under old business, it was mentioned that a Peer Review Committee had been formed on the local level as suggested by the previous meeting. Representative members from each of the hospitals of a three-county district had been appointed by their hospital staffs. A resolution upon the death of Eliot Stadler, M.D. was read and spread on the record of the Society by approval of the membership.

Meeting was adjourned at 9:30 p.m.

BADLEY E. BROWNLOW, M.D., *Secretary*

#### OXFORD

The Oxford County Medical Society held a meeting at South Paris, Maine on October 13, 1971.

Besides routine business, Drs. Tsung H. Li, Kenneth G. Hamilton and James A. Edmond were elected to membership.

Drs. H. Carl Amrein and Linus J. Stitham attended and gave informal talks to the group.

STEPHEN B. DEWING, M.D., *Secretary*

# MAINE MEDICAL ASSOCIATION


## *OFFICIAL ROSTER*

### Association Members

### County and Alphabetical Listing

Published through the courtesy of the  
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Portland, Maine 04101

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Volume 62, Number 1  
January 1971



## MEDICAL SPECIALTIES

The following Specialties, including General Practice, are recognized by the American Medical Association:

JES	Allergy (sub-specialty of Internal Medicine)	OPH	Ophthalmology
A	Anesthesiology	ORS	Orthopedic Surgery
A	Aerospace Medicine (special field of Preventive Medicine)	OTO	Otolaryngology
)	Cardiovascular Disease (sub-specialty of Internal Medicine)	PATH	Pathology
IP	Child Psychiatry (sub-specialty of Psychiatry)	PD	Pediatrics
IS	Colon and Rectal Surgery	PDA	Pediatric Allergy (sub-specialty of Pediatrics)
	Dermatology	PDC	Pediatric Cardiology (sub-specialty of Pediatrics)
}	Diagnostic Roentgenology (special field of Radiology)	PMR	Physical Medicine and Rehabilitation
OP	Forensic Pathology (special field of Pathology)	PS	Plastic Surgery
:	Gastroenterology (sub-specialty of Internal Medicine)	P	Psychiatry
:	General Practice	PH	Public Health (special field of Preventive Medicine)
'M	General Preventive Medicine (special field of Preventive Medicine)	PUD	Pulmonary Diseases (sub-specialty of Internal Medicine)
:	General Surgery	R	Radiology
:	Internal Medicine	TR	Therapeutic Radiology (special field of Radiology)
:	Neurological Surgery	TS	Thoracic Surgery
:	Neurology	U	Urology
IG	Obstetrics and Gynecology	OO	Unspecified (retired, not in practice, no specialty reported)
A	Occupational Medicine (special field of Preventive Medicine)	99	Other

## Members

Active—Honorary—Senior—Affiliate—Junior—Service—Service Affiliate  
(Corrected to December 1, 1970)

### ANDROSCOGGIN COUNTY

*President* — Lionel R. Tardif, M.D.

*Secretary-Treasurer* — Donald L. Anderson, M.D.

#### ACTIVE

mfilo, Basil (ANES)	626 Main St., Lewiston	04240
nderson, Donald L. (U,GS)	369 Main St., Lewiston	04240
nderson, Dorothy (ANES)	369 Main St., Lewiston	04240
rchambault, John L. (GP)	University Park Apts. 13A, Orono	04473
rchambault, Philip L. (ORS)	346 Main St., Lewiston	04240
reaker, Vincent H. (GP,OBG)	85 Wood St., Lewiston	04240
egel, Paul M. (ORS)	185 Webster St., Lewiston	04240
liveau, Bertrand A. (IM)	56 Howe St., Lewiston	04240
sch, John J. (GP,CD)	105 Elm St., Mechanic Falls	04256
ibelin, Miquelito A. (OBG)	344 Main St., Lewiston	04240
iron, Frederic J. (GP)	21 Champlain Ave., Lewiston	04240
arrier, John W. (R)	Central Maine Gen. Hosp., Lewiston	04240
rapin, Milan A. (IM)	237 Turner St., Auburn	04210
app, Waldo A. (GS)	215 College St., Lewiston	04240
apperton, Gilbert (ANES)	300 Main St., Lewiston	04240
outier, Wilfrid A. (GS)	646 Main St., Lewiston	04240
mmings, Paul H. (GS)	181 Russell St., Lewiston	04240
eCosta, Donald A. (GP)	Poland Spring	04274
ycio, George (OBG)	300 Pine St., Lewiston	04240
ycio, Mary T. (ANES)	3 Bayberry Lane, Lewiston	04240
ouard, Julio (CHP,P)	Box C, Pownal	04069
inning, Joseph P. (PATH)	Central Maine Gen. Hosp., Lewiston	04240
erguson, Barbara F. (PATH)	Rt. 4, Box 238 A, Old Danville Rd., Auburn	04210
shman, Louis N. (GS,TS)	185 Webster St., Lewiston	04240
anders, Merton N. (OTO)	1 High St., Lewiston	04240
ortier, Paul J. (ORS)	111 Webster St., Lewiston	04240
ost, Robert A. (IM)	93 Summer St., Auburn	04210
auvreau, Norman O. (OBG)	78 Pine St., Lewiston	04240
oodwin, Ralph A., Jr. (OPH)	33 Court St., Auburn	04210
reen, Ross W. (GS)	33 Court St., Auburn	04210
reene, John P. (ORS)	19 Sabattus St., Lewiston	04240
reene, Merrill S. F. (GP,OM)	466 Main St., Lewiston	04240
rimes, Gilbert R. (PD)	185 Webster St., Lewiston	04240
aas, Rudolph (IM)	480 Main St., Lewiston	04240
all, Lillian M. (IM)	91 Sabattus St., Lewiston	04240
annigan, Charles A. (IM)	85 Goff St., Auburn	04210
annigan, Margaret H. (D)	85 Goff St., Auburn	04210
arkins, Michael J. (GS)	437 Main St., Lewiston	04240
errick, Stanley E., Jr. (IM)	Central Maine Gen. Hosp., Lewiston	04240
unter, Albert L. (PATH)	45 Golder St., Lewiston	04240
mes, Chakmakis (GP,GS)	47 Howe St., Lewiston	04240
mes, John A. (OBG)	117 Goff St., Auburn	04210
anda, Yasuo (ANES)	St. Mary's Gen. Hosp., Lewiston	04240
aplan, Abraham (GS,TS)	85 Goff St., Auburn	04210
noppers, Jan (GP)	54 Pine St., Lewiston	04240
raunz, Robert F. (IM,C)	300 Main St., Lewiston	04240
Flamme, Paul J. (IM)	106 Russell St., Lewiston	04240

Leitman, Reuben (P)	188 Sabattus St., Lewiston	04240
Leonardi, Joseph A. (R)	Central Maine Gen. Hosp., Lewiston	04240
Lichter, Horatio A. (PD,PDC)	54 Pine St., Lewiston	04240
Lidstone, Frederick B. (OBG)	117 Goff St., Auburn	04210
Lighthart, Pim W. K. (P)	147 Washington St., Auburn	04210
Lynn, Geraldine (GP,OBG)	188 Russell St., Lewiston	04240
Marcotte, Andre P. (ORS)	342 Main St., Lewiston	04240
Marshall, Richard A. (ANES)	Central Maine Gen. Hosp., Lewiston	04240
Martel, Cyprien L., Jr. (GS)	91 Bartlett St., Lewiston	04240
Mendes, Joseph M. (GP,IM)	5 School St., Lisbon Falls	04252
Mendros, John G. (GP)	111 Webster St., Lewiston	04240
Milazzo, John (GP)	42 Elm St., Auburn	04210
Miller, Clark F. (R)	Greene	04236
Morin, Gerard L. (GS)	185 Webster St., Lewiston	04240
Morissette, Russell A. (PD)	185 Webster St., Lewiston	04240
Nadeau, J. Paul (GP)	91 Pine St., Lewiston	04240
Nadeau, Lawrence A. (R)	41 Sherbrooke Ave., Lewiston	04240
O'Sullivan, James V. I. (GS)	376 Main St., Lewiston	04240
Pandya, Najib M. (P)	7 Novella St., Lewiston	04240
Potts, Ronald S. (PATH)	Central Maine Gen. Hosp., Lewiston	04240
Proulx, Harvey J. (OTO)	184 Webster St., Lewiston	04240
Rando, Joseph J. (U)	111 Webster St., Lewiston	04240
Reeves, Edward L. (GP)	179 Sabattus St., Lewiston	04240
Reeves, Helene M. (PH)	179 Sabattus St., Lewiston	04240
Rock, Daniel A. (NS)	477 Main St., Lewiston	04240
Rosenblatt, Stanley D. (IM)	480 Main St., Lewiston	04240
Sanford, Theodore H. (OBG)	185 Webster St., Lewiston	04240
Shems, Albert (PD)	487 Main St., Lewiston	04240
Shields, Daniel R. (U)	369 Main St., Lewiston	04240
Shields, Thomas F. (ORS)	300 Pine St., Lewiston	04240
Spear, William (GP)	107 Main St., Lisbon Falls	04252
Steele, Charles W. (IM,CD)	472 Main St., Lewiston	04240
Swengel, Richard M. (NS,99)	477 Main St., Lewiston	04240
Tardif, Lionel R. (OBG)	111 Webster St., Lewiston	04240
Taylor, Richard W. (R)	34 Buttonwood Lane, Lewiston	04240
Tchao, Jou S. (OPH,99)	181 Russell St., Lewiston	04240
Thacher, Henry C. (PD)	117 Goff St., Auburn	04210
Tibbetts, Otis B. (OPH)	181 Gamage Ave., Auburn	04210
Tousignant, Camille (GP,PD)	111 Pine St., Lewiston	04240
Turcotte, Richard W. (IM)	70 Pine St., Lewiston	04240
Viles, Wallace E. (GP)	Turner	04282
Wakefield, Robert D. (PATH)	St. Mary's Gen. Hosp., Lewiston	04240
Webber, Wedgwood P. (GS)	460 Main St., Lewiston	04240
Young E. Stanley (GP)	Poland Spring	04274
Zanca, Ralph (IM,99)	86 Pine St., Lewiston	04240

#### HONORARY

Goodwin, Ralph A., Sr. (GP)	56 Denison St., Auburn	04210
Russell, Daniel F. D. (GP)	Leeds	04263
Williams, James A. (GP)	39 Pleasant St., Mechanic Falls	04256

#### SENIOR

Branch, Charles F. (PATH,FOP)	69 Gamage Ave., Auburn	04210
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Giguere, Eustache N. (GP) 90 Webster St., Lewiston 04240  
 Rand, Carleton H. (ORS) 219 Oak St., Lewiston 04240  
 Sweatt, Linwood A. (OO) 48 Drummond St., Auburn 04210

## AROOSTOOK COUNTY

*President* – I. Mead Hayward, M.D.

*Secretary* – George J. Harrison, M.D.

*Treasurer* – Clyde I. Swett, M.D.

### ACTIVE

Albert, Rodrigue J. (PD) 9 Pleasant St., Fort Kent 04743  
 Albro, Ward A. (ANES) County Rd., Houlton 04730  
 Allison, Horace R. (PD) 555 Main St., Presque Isle 04769  
 Aungst, Melvin R. (GP,GS) Morneau Building, Fort Kent 04743  
 Burr, Charles G. (GP,ANES) 21 Court St., Houlton 04730  
 Carton, Arthur K. (GS) 7 Park St., Houlton 04730  
 Collins, H. Douglas (IM) Caribou Clinic, Caribou 04736  
 Curtin, Daniel C. (IM) 555 Main St., Presque Isle 04769  
 Donahue, Clement L. (OPH) 22 Sweden St., Caribou 04736  
 Donahue, Gerald H. (GP,PD) 4 Station St., Presque Isle 04769  
 Dunham, Marguerite C. (PH) R.F.D. No. 1, Dresden 04342  
 Foy, I. Howard (GP) Arthur R. Gould Mem. Hosp., Presque Isle 04769  
 Giberson, Raymond G. (GS) 156A Academy St., Presque Isle 04769  
 Gormley, Eugene G. (GS) Market Square, Houlton 04730  
 Gregory, Frederick J. (GS) So. Main St., Caribou 04736  
 Griffiths, Eugene B. (GP) 350 Main St., Presque Isle 04769  
 Hamlin, Paul S. (U) 122 Academy St., Presque Isle 04769  
 Harrison, George J. (GP) Market Square, Houlton 04730  
 Hayward, I. Mead (PD) So. Main St., Caribou 04736  
 Helfrich, Harry M., Jr. (IM,CD) 122 Academy St., Presque Isle 04769  
 Higgins, George F. (OBG) 122 Academy St., Presque Isle 04769  
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 Johnson, Gordon N. (GS) Box 86, Houlton 04730  
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 Labbe, Onil B. (GP) Van Buren 04785  
 MacDonald, G. Vernon A. (GP) Box 228, Ashland 04732  
 Madigan, John B. (GP,ANES) Houlton 04730  
 Mazerolle, Denis R. (OBG) 228 Sweden St., Caribou 04736  
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 O'Brien, William A. (R) Arthur R. Gould Mem. Hosp., Presque Isle 04769  
 Ouellette, Benoit (GP,OBG) 1 James St., Fort Kent 04743  
 Page, Rosario A. (GS) 22 Sweden St., Caribou 04736  
 Pendleton, Arthur D. (GP,ANES) 3 Green St., Fort Fairfield 04742  
 Pines, Philip (GP,GS) Maine St., Limestone 04750  
 Price, Richard D. (ANES) R.F.D. 2, Caribou 04736  
 Proctor, Ray A. (GP,IM) Garden Circle, Caribou 04736  
 Reynolds, Arthur P. (GP,GS) 29 Second St., Presque Isle 04769  
 Rideout, Samuel (GP,GS) Green St., Fort Fairfield 04742  
 Sanfacon, Philip G. (GP,ANES) Main St., Van Buren 04785  
 Selmei, Tibor G. (PATH) Hayden Ct., Woodstock, N. B., Can. 04769  
 Smith, Carroll H. (PATH) Box 785, Presque Isle 04769  
 Smith, Margaret S. (PD) Box 967, Presque Isle 04769  
 Somerville, Robert B. (GS) 45 Hillside St., Presque Isle 04769  
 Swett, Clyde I. (GS) 18 Sherman St., Island Falls 04747  
 Toussaint, Leonid G. (GP,CD) Box 9, Fort Kent 04743  
 White, Leland M. (IM,A) 18 Pleasant St., Caribou 04736  
 Williams, Edward P. (GP,OBG) 72 Main St., Houlton 04730  
 Wilson, G. Ivan (IM) 48 Court St., Houlton 04730  
 Yao, Jose P. (GP,U,GS) Main St., Van Buren 04785

### HONORARY

Boone, Storer W. (GP,GS) 54 Third Ave., Presque Isle 04769  
 Kirk, William V. (GP,GS) Eagle Lake 04739

### SENIOR

Brown, Stephen S. (GP) Mars Hill 04758  
 Somerville, Wallace B. (GP) Mars Hill 04758

### AFFILIATE

Jorel, Louise E. (OBG) 240 State St., Presque Isle 04769

### JUNIOR

Ballard, Jeanne L. (PD) 6128 Ridgeacres Dr., Cincinnati, Ohio 45237  
 MacDonald, Lewis V. A. (R) (Address Unknown)

### SERVICE

Harvey, William C. (IM) Wilford Hall Hosp., Lackland AFB, Tex. 78236

## CUMBERLAND COUNTY

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*Secretary-Treasurer* – Douglas R. Hill, M.D.

### ACTIVE

Adams, Marvin C. (OTO) 25 Bramhall St., Portland 04111  
 Agan, Robert W. (ANES) 144 State St., Portland 04111  
 Allen, Donald E. (PS) 95 West St., Portland 04111  
 Allport, Robert B. (PD) Box C, Pownal 04001  
 Anderson, John B. (GP) Dudley Coe Inf., Bowdoin College Brunswick 04001  
 Andrews, Anneliese M. (ANES) Maine Medical Ctr., Portland 04111  
 Ansell, Harvey B. (D) 39 Deering St., Portland 04111  
 Applin, Hilton H. (IM,99) 6 Cumberland St., Brunswick 04001  
 Aranson, Albert (IM,PUD) Maine Medical Ctr., Portland 04111  
 Asali, Louis A. (GS) 29 Deering St., Portland 04111  
 Austin, William H. (IM,99) 22 Bramhall St., Portland 04111  
 Bacastow, Merle S. (IM) 640 So. Grandview Lane, Lake Forest, Ill. 60007  
 Bachrach, Louis (GP,PD) 65 Baribeau Dr., Brunswick 04001  
 Baldini, Elio (ANES) 22 Bramhall St., Portland 04111  
 Baldwin, Warren C. (OBG) 42 Deering St., Portland 04111  
 Barnes, Kirk K. (GS) Baribeau Dr., Brunswick 04001  
 Barron, Martin A., Jr. (PD) 37 Deering St., Portland 04111  
 Bennet, Eben T. (OBG) 49 Deering St., Portland 04111  
 Bettel, Ronald A. (GS) Parkview Professional Bldg., Brunswick 04001  
 Bidwell, Robinson L. (NS,N) 31 Bramhall St., Portland 04111  
 Bliss, Harry A. (CD) 39 Deering St., Portland 04111  
 Bonney, James H. (IM) 53 Chadwick St., Portland 04111  
 Bove, Louis G. (IM) 233 Vaughan St., Portland 04111  
 Bowman, Peter W. (CHP,P) Box C, Pownal 04001  
 Branson, Sidney R. (GP) 37 Main St., So. Windham 04001  
 Briggs, Russell C. (R) Maine Medical Ctr., Portland 04111  
 Briggs, Winton (IM) 291-A Ocean House Rd., Cape Elizabeth 04111  
 Brinkman, Carl A. (NS) 31 Bramhall St., Portland 04111  
 Broggi, Frank S. (P) 18 Neal St., Portland 04111  
 Brown, Douglas H. (GP) 548 Shore Rd., Cape Elizabeth 04111  
 Budd, William L. (IM) Parkview Professional Bldg., Brunswick 04001  
 Bullington, Sunny J. (OPH) 56 Baribeau Dr., Brunswick 04001  
 Burke, John N. (OBG) 144 State St., Portland 04111  
 Burnett, Claude A., Jr. (GS,TS) 59 Deering St., Portland 04111  
 Burnham, Harold N. (GP) 130 Main St., Gorham 04001  
 Burns, Robert M. (GP) Box 151, Westbrook 04001  
 Capron, Charles W. (R) 22 Bramhall St., Portland 04111  
 Carroll, Ronald J. (IM) 255 Western Prom., Portland 04111  
 Carson, Robert S. (OBG) Baribeau Dr., Brunswick 04001  
 Chatterjee, Manu (IM,CD) 295 Water St., Augusta 04330  
 Christensen, Harry E. (OM) South Freeport 04001  
 Ciampi, Louis A. (GP) 326 Stevens Ave., Portland 04111  
 Clark, Frederick B. (U) 131 State St., Portland 04111  
 Clarkin, Charles P. (R) 64 Brookside Rd., Portland 04111  
 Cole, Donald P. (D) 45 Deering St., Portland 04111  
 Conneen, Thomas F. (IM) 131 Chadwick St., Portland 04111  
 Contartese, Michael (GP) 149 Main St., Freeport 04001  
 Cope, Sara K. (PD) 265 Western Prom., Portland 04111  
 Crane, Lawrence (ORS) 157 Pine St., Portland 04111  
 Cummings, George O., Jr. (OTO) 47 Deering St., Portland 04111  
 Cunningham, Alice N. (OBG) Parkview Professional Bldg., Brunswick 04001  
 D'Andrea, Anthony L. (GP) 171 State St., Portland 04111  
 Darby, Alfred E., Jr. (CHP,P) Rt. 1, Box 426, Scarborough 04001  
 Davidson, David (IM) 235 State St., Portland 04111  
 Davidson, Gisela K. (IM) 235 State St., Portland 04111  
 Davies, Lloyd G. (GP) 249 Ocean House Rd., Cape Elizabeth 04111  
 Davis, Paul V. (GP) 94 Main St., Bridgton 04001  
 Davy, Carmel L. (PATH) Webber Hosp., Biddeford 04001  
 Davy, John R. (IM) 61 Thomas St., Portland 04111  
 Delaney, Frederick G. (GP) 130 Main St., Gorham 04001  
 Deming, Howard R. (R) Maine Medical Ctr., Portland 04111  
 Derry, G. Hermann (GP) 690 Congress St., Portland 04111  
 Dillihunt, Richard C. (GS) 7 Bramhall St., Portland 04111  
 Dinan, John T., Jr. (GS) 7 Bramhall St., Portland 04111  
 Dionne, Maurice J. (GP,GS) Baribeau Dr., Brunswick 04001  
 Doby, Tibor (R) Mercy Hosp., Portland 04111  
 Dore, Kenneth E. (GP) 133 Main St., Fryeburg 04001  
 Douphinett, Otis J. (OPH) 763 Congress St., Portland 04111  
 Drake, Emerson H. (GS,TS) 18 Bramhall St., Portland 04111  
 Drexler, James E. (ANES) Ward Town Rd., Freeport 04001  
 Earnhardt, Joseph B. (OBG) Hammond Rd., Westbrook 04001  
 Edgar, Joseph H., Jr. (IM,C) 128 Chadwick St., Portland 04111  
 Elkins, Alan M. (P) Maine Medical Ctr., Portland 04111  
 Fakhery, Behzad (GS) 111 Webster St., Lewiston 04240  
 Ferguson, Franklin F. (PATH) 22 Bramhall St., Portland 04111  
 Fife, James L. (GS) 65 Baribeau Dr., Brunswick 04001  
 Finks, Henry B. (GP) 73 Deering St., Portland 04111  
 Fish, Nicholas (CP) 12 Sturdivent Rd., Cumberland Foreside 04111



xx, Francis H. (PD,N)	83 West St., Portland	04102	Ottum, Alvin E. (OBG)	148 State St., Portland	04101
alen, Robert S. (R)	6 Breckan Rd., Brunswick	04011	Pawle, Robert H. (GP)	251 U. S. Rt. 1, Falmouth	04105
er, Charles R. (GP)	208 Vaughan St., Portland	04102	Pennoyer, Douglass C. (GS)	112 Vaughan St., Portland	04102
er, George I., Jr. (GP)	208 Vaughan St., Portland	04102	Penta, Walter E. (GP,OM)	316 Woodford St., Portland	04103
eyerhahn, George (GP,IM)	73 Deering St., Portland	04101	Perkins, Niles L. (PH,IM)	R.F.D. No. 1, Bowdoinham	04008
ibbons, John F. (R)	22 Bramhall St., Portland	04102	Pogue, Jackson S. (GP)	529 Gilmore Ave., Trafford, Pa.	15085
ivertz, Bernard (CD,IM)	131 Chadwick St., Portland	04102	Poliner, Irving J. (IM,GE)	95 West St., Portland	04102
lassmire, Charles R. (IM)	37 Deering St., Portland	04101	Polisner, Saul R. (OPH)	143 Vaughan St., Portland	04102
luck, Kenneth A. (GP)	Hospital Dr., Bridgton	04009	Porter, Joseph E. (PATH)	22 Bramhall St., Portland	04102
odsoe, John A. (ORS)	7 Bramhall St., Portland	04102	Proudian, Paul O. (GP,P)	776 Main St., Westbrook	04092
oduti, Richard J. (OPH)	9 Deering St., Portland	04101	Ray, Ferris S. (GS)	7 Bramhall St., Portland	04102
oldfarb, Walter B. (GS)	72 West St., Portland	04102	Rerrick, Erwin G. (PATH)	Box C, Pownal	04069
od, Philip G. (PD)	54 Edison Dr., Augusta	04330	Richards, A. Dewey (GP)	11 Gage St., Bridgton	04009
reco, Edward A. (IM,CD)	12 Pine St., Portland	04102	Robinson, Hugh P. (U)	7 Bramhall St., Portland	04102
reco, Edward A., Jr. (IM)	12 Pine St., Portland	04102	Rogers, Albert M. (ORS)	157 Pine St., Portland	04102
rell, William J., III (IM)	321 Brackett St., Portland	04102	Rubins, Nina B. (GP)	E.A. Center Mem. Clinic, Steep Falls	04085
allett, George W. (PD)	22 Bramhall St., Portland	04102	Sager, George F. (GS)	7 Bramhall St., Portland	04102
anley, Daniel F. (GP,ORS)	Box 250, Brunswick	04011	Santoro, Domenico A. (IM)	43 Deering St., Portland	04101
ardy, Edmund W. (IM)	134 U. S. Rt. 1, Falmouth	04105	Sapiro, Howard M. (GP)	Chateau Westgate, 1130 Oak Lane, Brockton, Mass.	02401
awkes, Richard S. (IM)	233 Vaughan St., Portland	04102	Saunders, Norman W. (IM)	233 Vaughan St., Portland	04102
eifetz, Ralph (PD)	173 State St., Portland	04101	Sawyer, Howard P., Jr. (ANES)	11 Bramhall St., Portland	04102
ebert, Clement A. (GS,TS)	321 Brackett St., Portland	04102	Selvage, Irving L., Jr. (R)	22 Bramhall St., Portland	04102
ll, Douglas R. (GP)	855 Sawyer St., South Portland	04106	Serrage, John C. (PD)	38 Deering St., Portland	04101
heckley, Harris (GP)	331 Cottage Rd., South Portland	04106	Shapiro, Morrill (GS)	7 Bramhall St., Portland	04102
olt, C. Lawrence (IM)	41 Fox Ave., St. John's, Newfoundland, Can.		Skillin, Charles E. (OBG)	690 Congress St., Portland	04102
es Campomanes, Carolina R. (ANES)	144 State St., Portland	04101	Sommer, Robert G. (D)	47 Deering St., Portland	04101
cobson, Payson B. (OPH)	295 Brighton Ave., Portland	04102	Stocks, Joseph F. (PATH,PD)	22 Bramhall St., Portland	04102
hanson, Albert C. (OTO)	131 Chadwick St., Portland	04102	Storer, Daniel P. (IM,99)	108 Fessenden St., Portland	04103
ent, Stanley W. (OBG)	42 Deering St., Portland	04101	Strach, Toffield B. J. (IM,CD)	3 Deering St., Portland	04101
mura, Takanori (GP)	Box C, Pownal	04069	Stroud, Geoffrey A. (GP)	65 Baribeau Dr., Brunswick	04011
owles, John E. (OTO)	131 Chadwick St., Portland	04012	Swanson, Ronald A. (R)	Regional Mem. Hosp., Brunswick	04011
owles, Robert M. (OBG)	49 Deering St., Portland	04101	Swett, Alfred E. (R)	144 State St., Portland	04101
ostrubala, Thaddeus (P)	22 Bramhall St., Portland	04102	Sylvester, Stanley B. (OM)	400 Congress St., Portland	04111
unkle, E. Charles (N,IM)	131 Chadwick St., Portland	04102	Szelenyi, Ernest (PUD,IM)	Box C, Pownal	04069
ype, C. Philip (GS)	7 Bramhall St., Portland	04102	Tabachnick, Henry M. (IM)	110 Park Ave., Portland	04101
ughlin, K. Alexander (OBG)	201 State St., Portland	04101	Taxiarchis, Louis N. (PATH)	144 State St., Portland	04101
eckie, Michael I. (GP)	94 Auburn St., Portland	04103	Taylor, William F. (IM)	134 U. S. Rte. 1, Falmouth	04105
ighton, Wilbur F. (GS)	192 State St., Portland	04101	Telfeian, Alphonse (P)	321 Brackett St., Portland	04102
iter, Laban W. (IM,GE)	175 Vaughan St., Portland	04102	Tetreau, William J. (IM)	144 Spring St., Portland	04101
onard, Lawrence M. (RS)	7 Bramhall St., Portland	04102	Thompson, Philip P., Jr. (IM,99)	131 Chadwick St., Portland	04102
eschey, William H., Jr. (N)	7 Bramhall St., Portland	04102	Timothy, Robert P. (U)	7 Bramhall St., Portland	04102
vy, Richard A. (P)	128 Chadwick St., Portland	04102	Trask, Henry M. (GP,GS)	24 Hersey St., Portland	04103
bby, Harold E. (GP,99)	702 Main St., Westbrook	04092	Turcotte, Guy N. (P)	7 Bramhall St., Portland	04102
bby, John T. (OPH)	723 Congress St., Portland	04102	Turgeon, Raphael F. (GP,GS)	367 Main St., Westbrook	04092
ncolin, John R. (ANES)	22 Bramhall St., Portland	04102	Turnbull, Elliott D. (GP)	Elm House, Naples	04055
orente, Aldo F. (P)	56 Baribeau Dr., Brunswick	04011	Urjanis, Janis (GP)	Pineland Hospital & Training Ctr., Pownal	04069
ord, George P. (IM,CD)	7 Bramhall St., Portland	04102	Van Deventer, Wilhelm H. J. (ANES)	R.F.D. No. 1, Mere Point Rd., Brunswick	04011
rentz, John J. (PMR)	Maine Medical Ctr., Portland	04102	Van Lonkhuyzen, Maurice (OPH)	131 State St., Portland	04101
rimmer, Robert V. (OBG)	169 State St., Portland	04101	Villandry, Philip J. (ANES)	22 Bramhall St., Portland	04102
oring, William E. (PATH)	144 State St., Portland	04101	Walsh, Andrew C. (PMR)	144 State St., Portland	04101
ovely, David K. (OTO)	46 Deering St., Portland	04101	Walker, Douglass W. (PD)	Maine Medical Ctr., Portland	04102
ites, Chris A. (GS,TS)	7 Bramhall St., Portland	04102	Ware, Roland G., Jr. (R)	22 Bramhall St., Portland	04102
ack, Francis X. (ANES)	144 State St., Portland	04101	Webber, Peter B. (IM)	233 Vaughan St., Portland	04102
ackKinnon, Bernard L. (P)	22 Bramhall St., Portland	04102	Weekley, Melissa A. (99)	190 Pine St., Portland	04102
acVane, William L., Jr. (GS,TS)	211 State St., Portland	04101	White, Chester W., Jr. (ANES,99)	22 Bramhall St., Portland	04102
acier, Paul (OPH)	723 Congress St., Portland	04102	White, Houghton M. (PD)	56 Baribeau Dr., Brunswick	04011
altby, George L. (NS,N)	31 Bramhall St., Portland	04102	White, William J. (GP)	1 Mitchell Rd., South Portland	04106
arshall, Donald F. (U)	25 Bramhall St., Portland	04102	White, Richard L. (TS)	7 Bramhall St., Portland	04102
arston, Paul C. (GP)	Kezar Falls	04047	Whitney, Philip G. (IM)	233 Vaughan St., Portland	04102
artin, Ralf (IM,CD)	131 Chadwick St., Portland	04102	Winkelbauer, Rudolf G. (OBG)	Baribeau Dr., Brunswick	04011
artin, Thomas A. (ORS)	157 Pine St., Portland	04102	Woodman, Arthur B. (GP)	15 Johnson Rd., Falmouth Foreside	04105
atthews, Edward C. (PD,PDC)	131 Chadwick St., Portland	04102	Wyman, David S. (IM)	233 Vaughan St., Portland	04102
azzone, Giovanni (GP)	499 Stevens Ave., Portland	04103	Zolov, Benjamin (A,IM)	296 Congress St., Portland	04101
AFee, Robert E. (GS,99)	7 Bramhall St., Portland	04102			
ACann, Eugene C. (OBG)	49 Deering St., Portland	04101			
AFarland, Edward A. (GP,ANES)	Baribeau Dr., Brunswick	04011			
AGuire, Stuart W. (OPH)	131 State St., Portland	04101			
Antire, Barron F., Jr. (GP,IM)	13 W. Elm St., Yarmouth	04096			
ALean, E. Allan (OBG)	29 Deering St., Portland	04101			
AManamy, Eugene P. (GS)	72 West St., Portland	04102			
AMichael, Morton (P)	73 Deering St., Portland	04101			
Alkis, Andrew (P)	Box 161, Gray	04039			
Alker, Buell A. (OBG)	7 Bramhall St., Portland	04102			
Alker, Thor (GP)	752 Main St., Westbrook	04092			
Asovic, Robert C. (R)	22 Bramhall St., Portland	04102			
Aniutti, Gloria M. (P)	32 Deering St., Portland	04101			
Anton, Paul R. (CD)	131 Chadwick St., Portland	04102			
Anaghan, Stephen E. (ORS)	7 Bramhall St., Portland	04102			
Ankhhouse, William A. (GP,OM)	131 State St., Portland	04101			
Arison, Alvin A. (GS)	165 Glenwood Ave., Portland	04103			
Arison, Robert M. (OBG)	148 State St., Portland	04101			
Aulton, Albert W., Jr. (OPH)	180 State St., Portland	04101			
Aulton, Sumner E. (IM)	19 Deering St., Portland	04101			
Austed, Burton L. (PS)	73 Deering St., Portland	04101			
Ayton, Everett A. (PD,PDA)	131 Chadwick St., Portland	04102			
Aher, Harold L. (IM,CD)	131 Chadwick St., Portland	04102			
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Casey, William L. (ORS)	131 State St., Portland	04101	Howe, Chester W. (GS)	Blue Hill	0461
Cohen, Abram I. (OTO,A)	Smith St., Harrison	04040	Hsu, Theodore S. (OPH)	14 High St., Ellsworth	0460
Dooley, Francis M. (GP)	41 Kenwood St., Portland	04102	Isil, Neal H. (ANES)	50 Union St., Ellsworth	0460
Getchell, Ralph A. (GS)	14 Elmwood Rd., Cape Elizabeth	04107	Joost, Arthur M., Jr. (GP)	Box 520, Bucksport	0441
Johnson, Oscar R. (D)	9 Parsons Rd., Portland	04103	Knickerbocker, Charles H. (IM,CD)	15 High St., Bar Harbor	0460
Lappin, John J. (OTO)	171 State St., Portland	04101	Kopfmann, Harry (GP)	Deer Isle	0462
Lombard, Reginald T. (GP,OBG)	793 Main St., South Portland	04106	LaCasce, Joseph H. (IM)	50 Union St., Ellsworth	0460
McCrum, Philip H. (GP,OBG)	188 State St., Portland	04101	Lambdin, Morris A. (PD)	Maine Coast Mem. Hosp., Ellsworth	0460
O'Donnell, Eugene E. (GS)	Mercy Hospital, Portland	04101	Larrabee, Charles F. (GP)	1951 N. Meridian Rd., Tallahassee, Fla.	323
Scotlen, Adrian H. (D)	32 Deering St., Portland	04101	McIntyre, John D. (OBG)	50 Union St., Ellsworth	0460
Stevens, Theodore M. (OBG)	148 State St., Portland	04101	Murray, John G., Jr. (GP)	Blue Hill Mem. Hosp., Blue Hill	0461
Whittier, Alice A. S. (PD)	143 Neal St., Portland	04102	Palmer, Edward J. (GS)	Maine Maritime Acad., Castine	0442
Wight, Donald G. (GP)	30 Mitchell Rd., South Portland	04106	Pease, Horace B. (IM)	Maine Coast Mem. Hosp., Ellsworth	0460

#### AFFILIATE

Dyhrberg, Norman E. (GP,OBG)	Box 76, R.F.D. No. 4, Portland	04110
Huntress, Roderick L. (OO)	Box 419, North Windham	04062
Sidwell-Thompson, Doris M. (OO)	R.F.D. Whittier Rd., W. Ossipee, N. H.	03890
Titherington, John B. (OO)	97 Brook Rd., Falmouth	04105
Ward, John V. (OO)	8 Waites Landing Rd., Falmouth Foreside	04105

#### JUNIOR

Rubins, Talivaldis (GP,IM)	E.A. Center Mem. Clinic, Steep Falls	04085
Weaver, Michael L. (GS)	1011 Patrick St., Apt. 20, Flint, Mich.	48503
Sirodot, George (P)	Box 111, Independence, Iowa	50644

#### SERVICE

Gates, Clifford W. (CDR)	MC, USN, Naval Hospital, Camp Pendleton, Calif.	92055
Iszard, David M. (GP,IM)	c/o Peace Corps, 806 Conn. Ave., Washington, D.C.	20006
Stephenson, Richard B. (GS)	Bldg. 1, Rm. 118, National Institutes of Health, Bethesda, Md.	20014

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*Secretary-Treasurer* — Hays G. Bowne, M.D.

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Bowne, Hays G. (GP)	9A Main St., Farmington	04938
Brinkman, Harry (GS)	47 Perham St., Farmington	04938
Brinkman, Paul A. (GS)	Farmington	04938
Colley, Maynard B. (GP,ANES)	14 Main St., Farmington	04938
Condit, Roger E. (GP)	Box 711, Farmington	04938
Dixon, David C. (GS)	Box 792, Farmington	04938
Duffy, Wallace H. (GP,GS)	100 Main St., Farmington	04938
Eastman, Charles W. (GP,P)	15 Millett St., Livermore Falls	04254
Ekinici, Fevzi (IM,CD)	42 Main St., Livermore Falls	04254
Fiorica, Gaetano T. (GP)	12 Church St., Chisholm	04222
Floyd, Paul E. (OPH,OTO)	2 Middle St., Farmington	04938
Gashgai, Abdollah S. (GP)	Chisholm	04222
Pope, W. Dean (GP)	6 Pleasant St., Rangeley	04970
Reed, James W. (R)	18 Main St., Farmington	04938
Rowe, Gunther H. (GP,CRS)	12 Church St., Chisholm	04222
Smith, Christopher S. (GP)	Box 232, Farmington	04938

#### HONORARY

Weymouth, Currier C. (OO)	Eastmont Square, Farmington	04938
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*Secretary-Treasurer* — Bradley E. Brownlow, M.D.

#### ACTIVE

Britt, Richard W. (GP,OTO)	Blue Hill	04614
Brownlow, Bradley E. (GP)	Blue Hill Mem. Hosp., Blue Hill	04614
Cameron, Dwight (GP,GS)	12 Mt. Desert St., Bar Harbor	04609
Clason, Walton P. C. (IM,CD)	12 Pleasant St., Ellsworth	04605
Coffin, Ernest L. (GP)	Northeast Harbor	04662
Cooper, Llewellyn W. (GS)	Hancock St., Bar Harbor	04609
English, Wesley J. (GS)	Hancock St., Bar Harbor	04609
Fuller, George G. (R)	50 Union St., Ellsworth	04605
Garnett, James H. P. (GS)	Northeast Harbor	04662
Gerdes, Kendall A. (GP)	Kimball Rd., Northeast Harbor	04662
Granger, Robert C. (GS)	Blue Hill	04614
Gray, Philip L. (GP,OPH)	Blue Hill	04614
Hewson, John R. (GP)	Southwest Harbor Med. Ctr., Southwest Harbor	04679

Williamson, Elizabeth E. (ANES)	100 Main St., Southwest Harbor	0462
Williamson, Russell G. (GS)	Blue Hill Mem. Hosp., Blue Hill	0462
Wilson, Robert D. (R)	Mt. Desert Island Hosp., Bar Harbor	0460

#### HONORARY

Babcock, Harold S. (OO)	Castine	0442
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#### JUNIOR

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Field, Richard L. (GP)	Shelbourne, Vt.	0542
Bromley, William C. (GP)	2400 Smiley Way, Jackson, Mich.	4922

#### SERVICE

York, Elihu (AM,IM)	(CDR) MC US Naval Aerospace Med. Inst., Pensacola, Fla.	325
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#### KENNEBEC COUNTY

*President* — George I. Gould, M.D.  
*Secretary-Treasurer* — Francis A. Spellman, M.D.

#### ACTIVE

Atallah, Antoine A. (IM)	58 Elm St., Waterville	049
Barnard, John M. H. (GP)	Doctors Park, 89 Hospital St., Augusta	043
Barron, Richard E. (GP,GS)	Western Ave., Winthrop	043
Beckerman, Stanley C. (IM)	175 Silver St., Waterville	049
Betts, Anthony (PATH)	Thayer Hospital, Waterville	049
Bhatnagar, Hemendra N. (OTO)	67 Silver St., Waterville	049
Bolduc, Jean L. (GP,GS)	325 Kennedy Dr., Waterville	049
Bourassa, Harvey J. (GP,GS)	47 Elm St., Waterville	049
Brann, Henry A. (GP)	31 Weston Ave., Augusta	043
Bull, Frank B. (GP,GS)	5 Hasson St., Hallowell	043
Callahan, Robert L. (TS)	12 Spruce St., Augusta	043
Canal, Ory D. (P)	193 Cony St., Augusta	043
Castellanos, Jose (GP,ORS)	Augusta State Hosp., Augusta	043
Chamberlin, Richard T. (IM)	Thayer Hospital, Waterville	049
Chasse, Richard L. (GP,GS)	18 Park St., Waterville	049
Chen, John T. (R)	Cherry Hill Ter., Waterville	049
Ciembroniewicz, Julius E. (NS,N)	18 Spruce St., Augusta	043
Cook, Aaron (GP,GS)	23 High St., Waterville	049
Crawford, Joseph R. (GP,GS)	12 Spruce St., Augusta	043
Cruikshank, Frank S., Jr. (R)	Eaton Dr., Waterville	049
Culver, Raymond E. (IM,GE)	14 Gilman St., Waterville	049
Dachslager, Philip (GP,IM)	8 Green St., Augusta	043
Darlington, Brinton T. (IM)	Doctors Park, 89 Hospital St., Augusta	043
Davis, Earle M. (U)	325 Kennedy Dr., Waterville	049
DeHart, Cor (P,CHP)	Thayer Hospital, Waterville	049
Denison, John D. (GP)	89 Hospital St., Augusta	043
Dennis, Richard H. (OPH)	325A Kennedy Dr., Waterville	049
Diehl, William H., Jr. (OTO)	325B Kennedy Mem. Dr., Waterville	049
Dole, Richard R. (IM)	325 Kennedy Dr., Waterville	049
Dore, Clarence E. (GP)	2 School St., Waterville	049
Dunn, Robert H. (P)	Veterans Adm., Togus	043
Ellington, Eric E. (NS,N)	12 Spruce St., Augusta	043
Emanuel, Meyer (U)	Veterans Adm., Togus	043
Ervin, Edmund N. (PD,99)	2 School St., Waterville	049
Fisher, Dean H. (PH)	State House, Augusta	043
Fisher, Samson (A,D)	26 College Ave., Waterville	045

Jaralanga, Efraim C. (IM) Augusta State Hosp., Augusta 04330  
 Jiddings, Paul D. (GS) 31 Western Ave., Augusta 04330  
 Jiesen, Joseph H. (ORS) 34 Gilman St., Waterville 04901  
 Jingras, Napoleon J. (ANES) 6 E. Chestnut St., Augusta 04330  
 Joodof, Irving I. (PATH) Thayer Hospital, Waterville 04901  
 Jould, George I. (GP,ANES) 79 Main St., Richmond 04357  
 Juillemette, Maurice R. (GP) 107 Water St., Augusta 04330  
 Juite, L. Armand, Jr. (GS) 45 Elm St., Waterville 04901  
 Jalperin, David C. (GS) 89 Hospital St., Augusta 04330  
 Javes, James C. (PATH) 6 E. Chestnut St., Augusta 04330  
 Jiebel, Joseph J. (IM,99) 34 Gilman St., Waterville 04901  
 Jill, Anthony B. (IM) 283 Water St., Augusta 04330  
 Jill, Kevin (OPH) 325A Kennedy Dr., Waterville 04901  
 Jirschberger, Celia (P) Augusta State Hosp., Augusta 04330  
 Jornberger, H. Richard (TS,GS) 325 Kennedy Dr., Waterville 04901  
 Jurd, Allan C. (OPH) 5 Hasson St., Hallowell 04347  
 Jones, Gareth O. M. (ANES) Augusta Gen. Hosp., Augusta 04330  
 Jones, Paul A., Jr. (OBG) 2 School St., Waterville 04901  
 Jopp, Donald W. (GP) Rt. 4 Gardiner 04345  
 Jol, Chandra P. (IM,P)  
 Munroe Wing, Regina Gen. Hosp., Regina, Saskatchewan, Can.  
 Joadley, Peter J. (IM) R.F.D., Wayne 04284  
 Jopore, Anthony E. (GP,CD) 128 Main Ave., Gardiner 04345  
 Jarshall, Joseph A. (GS) 177 Main St., Waterville 04901  
 Jarshall, Paul A. (ANES)  
 R.F.D. No. 1, Box 121A, Ridge Rd., Fairfield 04937  
 Jathews, Hugh J., Jr. (GP,ANES) 345 Water St., Gardiner 04345  
 JcKendry, James R. (ORS) 12 Spruce St., Augusta 04330  
 JcLaren, John J. (U) 31 Western Ave., Augusta 04330  
 JcLaughlin, Clarence R. (GP,GS) 345 Water St., Gardiner 04345  
 JcLaughlin, Ivan E. (GP,R) Rt. 5A, Gardiner 04345  
 Jclendy, Oakley A. (GS)  
 Doctors Park, 89 Hospital St., Augusta 04330  
 Jichaud, Joseph C. (GS) 160 Silver St., Waterville 04901  
 Jiliken, Howard H. (IM,CD)  
 R No. 1, Pond Rd., (Manchester), Hallowell 04347  
 Jiskimins, Joseph H. (PD) 325B Kennedy Dr., Waterville 04901  
 Johlar, Robert G. (IM)  
 Doctors Park, 89 Hospital St., Augusta 04330  
 Jonsivais, Alfredo (IM,P) 1 Western Ave., Winthrop 04364  
 Joore, Valentine J. (ANES) Thayer Hospital, Waterville 04901  
 Jorris, Craig W. (IM) R.F.D. No. 1, Church Hill Rd., Augusta 04330  
 Jkolaidis, Demitrios (R) 22 Ridgewood Dr., Augusta 04330  
 Jolin, Laurier E. (IM,CD) 14 Gilman St., Waterville 04901  
 J'Connor, Francis J. (R) 4 Woodlawn St., Augusta 04330  
 Jhler, Robert L. (IM) Box 42, Veterans Adm., Togus 04330  
 Jtterson, John C. (P) Augusta State Hosp., Augusta 04330  
 Jddie, Harry M. K. (GP)  
 Doctors Park, 89 Hospital St., Augusta 04330  
 Jfeiffer, Paul H. (IM,CD) 14 Gilman St., Waterville 04901  
 Jimpton, Jay R. (OPH) 283 Water St., Augusta 04330  
 Jomerleau, Ovid F. (GP,GS) 179 Main St., Waterville 04901  
 Julin, Albert A. (R) Cherry Hill Dr., Waterville 04901  
 Julin, James E. (OTO) 177 Main St., Waterville 04901  
 Jatt, Loring W. (OTO) 325 Kennedy Dr., Waterville 04901  
 Jovost, Helen C. (PD,PH) 48 Green St., Augusta 04330  
 Jeynolds, John F. (GS,TS) 325 Kennedy Dr., Waterville 04901  
 Jichards, Lee W., Jr. (OBG) 89 Hospital St., Augusta 04330  
 Jobertson, George J. (IM)  
 1370 Turnpike St., North Andover, Mass. 01845  
 Jodriguez, Jose M. (NS) 325 Kennedy Dr., Waterville 04901  
 Johm, Walter (P) Augusta State Hosp., Augusta 04330  
 Jussell, Theodore M. (PD)  
 Doctors Park, 89 Hospital St., Augusta 04330  
 Jyan, Patrick J. M. (GP) 345 Water St., Gardiner 04345  
 Jtir, Ahmet (CD,TS) Box 682, Augusta 04330  
 Junders, Allen I. (P) Ferry Rd., R.F.D. 2, Augusta 04330  
 Jhmidt, Lorrimer M. (MED.ADM.) Veterans Adm., Togus 04330  
 Jhumacher, William E. (P)  
 14 Westwood Rd., MD "B", Augusta 04330  
 Jhwarz, Harald J. (PATH) Seton Hospital, Waterville 04901  
 Jligman, Morris J. (P) Veterans Adm., Togus 04330  
 Jnenky, Joseph P. (P) Augusta State Hosp., Augusta 04330  
 Jwall, Kenneth W. (OBG) 2 School St., Waterville 04901  
 Jaw, John H. (GS) 131 Sewall St., Augusta 04330  
 Jeehan, Terrance J. (PD)  
 Doctors Park, 89 Hospital St., Augusta 04330  
 Jelton, M. Tichee (GS,OBG) 21 Western Ave., Augusta 04330  
 Jmpson, Margaret R. (P) 2 Sea Barn Rd., Cape Elizabeth 04107  
 Jnith, Kenneth E. (PATH) Veterans Adm., Togus 04330  
 Jbellman, Francis A. (IM,GE) Veterans Adm., Togus 04330  
 Jinchfield, Allan J. (ORS) Box 343, Augusta 04330  
 Jucki, Paul (ORS) 325 Kennedy Dr., Waterville 04901  
 Jurtevant, Vaughn R. (IM) 325 Kennedy Dr., Waterville 04901  
 Jkach, Robert J. (OPH) 325A Kennedy Dr., Waterville 04901  
 Jowne, Charles E. (GP) 18 Common St., Waterville 04901

Towne, John W. (GP) 325C Kennedy Mem. Dr., Waterville 04901  
 Trembly, Bruce (NS) 325 Kennedy Dr., Waterville 04901  
 Turner, Fennell P. (GS) Veterans Adm. Ctr., Togus 04330  
 Twadelle, Frank J. (GS) 345 Water St., Gardiner 04345  
 Uldall, Stella L. (P,CHP) Augusta State Hosp., Augusta 04330  
 Veilleux, Lucien F. (GS) 325 Kennedy Dr., Waterville 04901  
 Watanabe, Tatsuo (ORS) 325 Kennedy Mem. Dr., Waterville 04901  
 Wilder, William D. (GP) Box 2146, Augusta 04330  
 Wilson, Robert W. (GP) Veterans Adm., Togus 04330  
 Wren, James C. (IM,CD) Veterans Adm. Ctr., Togus 04330

#### HONORARY

Crawford, Albert S. (OO) 7483 Deep Run Rd., Birmingham, Mich. 48010  
 Goodrich, Blynn O. (GP,99) 45 Roosevelt Ave., Waterville 04901  
 Langer, Ella (PD,GPM) 192 Capitol St., Augusta 04330  
 Reynolds, Ralph L. (OBG,GS) 216 Main St., Waterville 04901

#### SENIOR

Bauman, Clair S. (PD) 159 Silver St., Waterville 04901  
 Herring, Leon D. (OO) Memorial Dr., Winthrop 04364  
 Hill, Howard F. (OPH) 325A Kennedy Dr., Waterville 04901  
 Marquardt, Matthias (OO) 109 Cony St., Augusta 04330  
 McQuillan, Arthur H. (GS) 177 Main St., Waterville 04901

#### AFFILIATE

Guite, L. Armand, Sr. (OO) 45 Elm St., Waterville 04901  
 Pomerleau, Rodolphe J. F. (GP) Cascade Pk., Rt. 1, Waterville 04901  
 Reel, John J. (GP) 59 So. Front St., Richmond 04357  
 Sleeper, Francis H. (OO) 3 Colony Rd., Augusta 04330

#### SERVICE

Ebersbach, David L. (GS) Qtrs 6, NAS, Brunswick 04011  
 Feagin, Oscar T. (IM,PH) Dept. of Health & Welfare, Augusta 04330

#### KNOX COUNTY

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#### ACTIVE

Ashley, Alta (PH) Box 87, Monhegan Island 04852  
 Britt, Robert C. (OBG) 108 Elm St., Camden 04843  
 Brouwer, Johan (IM,OBG) 5 Beech St., Rockland 04841  
 Clarke, Charles N. (IM) 108 Elm St., Camden 04843  
 Dennison, Frederick C. (IM) 3 Gilchrist St., Thomaston 04861  
 Earle, Ralph P. (GP) Vinalhaven 04863  
 Eddy, Robert H. (IM) 5 Beech St., Rockland 04841  
 Fuller, Barbara L. (GP) 20 Chestnut St., Rockland 04841  
 Furman, Robert S. (ORS) 22 White St., Rockland 04841  
 Hawkins, Donald B. (GS) Atlantic Ave. & Sea St., Camden 04843  
 Holz, Peter H. (PD) 51 Elm St., Camden 04843  
 Howard, Emery B., Jr. (PD) 23A Summer St., Rockland 04841  
 Jones, Paul A., Sr. (N,P) General Delivery, Union 04862  
 Kangas, Onni C. (OPH) 11 Maple St., Rockland 04841  
 Kibbe, Frank W. (PD) R.F.D., Lincolnville 04849  
 Killoran, Paul J. (R) Knox County Gen. Hosp., Rockland 04841  
 King, Merrill J., Jr. (OPH) Vinal Rd., West Rockport 04865  
 Lathbury, Vincent T. (P) Medical Arts Building, Rockland 04841  
 Lawry, Oram R., Jr. (GP) 96 Limerock St., Rockland 04841  
 Millington, Paul A. (GP,ANES) 44 Mountain St., Camden 04843  
 Morse, Edward K. (GS) 22 White St., Rockland 04841  
 Nuesse, William E. (U) 22 White St., Rockland 04841  
 Onat, Mustafa V. (GP,ANES) St. George 04857  
 Oppen, Lincoln (PATH) Knox Co. Gen. Hosp., Rockland 04841  
 Root, John A. (GS) 22 White St., Rockland 04841  
 Sigafos, J. Harvey (ANES) Pleasant Point 04563  
 Tounge, Harry G., Jr. (GP) 12 Union St., Camden 04843  
 Ward, William W. (GS,99) Box 646, Rockland 04841  
 Wasgatt, Wesley N. (GP) 41 Talbot Ave., Rockland 04841  
 Waterman, Dorothy (GP) Waldoboro 04572  
 Waterman, Richard (GP) Main St., Waldoboro 04572  
 White, Henry O. (GS) 22 White St., Rockland 04841  
 Williams, Thomas W. (IM) 22 White St., Rockland 04841  
 Woodruff, Alan F. (IM) 16 Summer St., Rockland 04841  
 Worthing, Verla E. (ANES) Box A, Thomaston 04861

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Campbell, Fred G. (GP) Box 484, Warren 04864  
 Loewenstein, George (OO) 1007 Woodside Dr., Clearwater, Fla. 33516



Naumer, Harry A. (OO) Lands' End, Port Clyde 04855  
 Platt, Anna (OO) Beauchamp Rd., Rockport 04856  
 Saunders, Sallie H. (OO) R.F.D., Camden 04843

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Stimson, Barbara B. (OO) Star Route 22-282, Owl's Head 04854

#### AFFILIATE

Alexander, Fay K. (R) Lincolnville 04849  
 Bean, Achsa M. (OO) Star Route 32, Owl's Head 04854

#### JUNIOR

Apollonio, Howard L. (OO) Box 34, Rockport 04856  
 McLellan, William A. (GP) Harbor Rd., Camden 04843

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Akar, Hamdi (IM,CD) 37 Oak St., Bath 04530  
 Andrews, John F. (GP) 67 Oak St., Boothbay Harbor 04538  
 Avantaggio, Frank O., Jr. (GS) Bristol Rd., Damariscotta 04543  
 Belknap, Samuel L. (GP) Damariscotta 04543  
 Blackburn, Nelson P. (PATH) Bath Memorial Hosp., Bath 04530  
 Bostwick, George W. (GP) Box 388, Newcastle 04553  
 Burden, Charles E. (PD) 1 North St., Bath 04530  
 Doble, Miriam (GP,ANES) 990 Washington St., Bath 04530  
 Dorogi, Louis V. (GS) Old Post Rd., Rt. 138, Bowdoinham 04008  
 Dougherty, John F. (GP) 112 Front St., Bath 04530  
 Evans, Peter A. (IM) 65 Baribeau Dr., Brunswick 04011  
 Evans, Richard, III (IM) Maine Medical Ctr., Portland 04102  
 Fichtner, Paul A. (GP) 10 Oak Grove Ave., Bath 04530  
 Gregory, Philip O. (GP,GS) St. Andrews Hosp., Boothbay Harbor 04538  
 Griffin, Carl R., Jr. (GS) 61 Atlantic Ave., Boothbay Harbor 04538  
 Holt, Alfred T. (ANES) Bath Mem. Hosp., Bath 04530  
 Hudson, Henry A. (R) Southport Island 04569  
 Keating, Anthony J. (GP) 10 Oak Grove Ave., Bath 04530  
 Kinder, Edward L., Jr. (GS) 1027 Washington St., Bath 04530  
 Leck, Richard C. (PATH) Bath Mem. Hosp., Bath 04530  
 Oceretko, Arkadij (GS) Gov. King Oak Grove Ave., Bath 04530  
 Powell, Ralph C. (GP) Damariscotta 04543  
 Proctor, Thomas E. (GP,GS) Boothbay Harbor 04538  
 Sieling, Walter H., Jr. (IM) Upper Round Pond Rd., Bristol 04539  
 Smith, Jacob (GP,ANES) 709 High St., Bath 04530  
 Smith, James O. (GP) 118 Front St., Bath 04530  
 Smith, Joseph I. (GP) 118 Front St., Bath 04530  
 Tracy, Mary J. (PD) Bristol Rd., Damariscotta 04543  
 Winchenbach, Francis A. (GS) 910 Washington St., Bath 04530

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Dalrymple, Sidney C. (OO) So. Great Rd., So. Lincoln, Mass. 01751  
 Kershner, Warren E. (OO) 57 Green St., Bath 04530

#### SENIOR

Bachulus, John M. (OO) 3 Breckan Rd., Brunswick 04011  
 Sherman, Fuller G. (OO) Spruce Pt., Boothbay Harbor 04538

#### AFFILIATE

Fite, Marcia (OO) Pemaquid Point 04558  
 Hamilton, Virginia C. (OO) South Harpswell 04079

#### JUNIOR

Conner, William W. (PATH) Waterman Mem. Hosp., Eustis, Fla. 32726  
 Marc, Joseph A. (R) 340 E. 34th St., New York, N.Y. 10016  
 Stetkevych, Alexander G. (P) 12 Meyers Crt., Colony, Albany, N. Y. 12200

#### SERVICE

Zeller, Alan W. (GS) Main St., Newcastle 04553

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#### ACTIVE

Aucoin, Peter B. (GP) 151 Franklin St., Rumford 04276

Bean, H. Richard (GP,ANES) 241 Main St., Norway 0426  
 Conway, Kevin (ANES) Rumford Com. Hosp., Rumford 0427  
 Dewing, Stephen B. (R) R.F.D. No. 2, Harrison 0404  
 Dixon, Walter G. (ORS,99) 16 Deering St., Norway 0426  
 DuMais, Alcide F. (GS) 73 High St., South Paris 0428  
 Egan, John F. (ORS) 810 Penobscot St., Rumford 0427  
 Elsemore, Dexter E. (GP,GS) 11 Main St., Dixfield 0422  
 Fenger, John R. (GS,99) 241 Main St., Norway 0426  
 Frigault, Emile J. (GP,R) Main St., Dixfield 0422  
 Ganguli, Adwaita K. (U) 191 Lincoln Ave., Rumford 0427  
 Gorayeb, Eugene (GP) 82 Maine Ave., Rumford 0427  
 Halladjian, Hagop (PATH) Rumford Com. Hosp., Rumford 0427  
 Handanos, Vassilios (PD) 191 Lincoln Ave., Rumford 0427  
 Harper, Harry L. (CD) 17 Main St., So. Paris 0428  
 Hazelton, Warren C. (GP) 2 E. Main St., So. Paris 0428  
 Hiebert, Joelle C., Jr. (GS) Box 148, Norway 0426  
 Jackson, Norman M. (CD) 9 Franklin St., Rumford 0427  
 Makin, John B., Jr. (OBG) 82 Maine Ave., Rumford 0427  
 Martin, Joseph E. (GP) 35 Main St., Mexico 0425  
 Moore, Beryl M. (GP) High St., Oxford 0427  
 Nangle, Thomas P. (GP) West Paris 0428  
 Oestrich, Alfred (GP) 25 Hartford St., Rumford 0427  
 Rowe, Linwood M. (R) Rumford Com. Hosp., Rumford 0427  
 Royal, Albert P., Jr. (GP,GS) 82 Maine Ave., Rumford 0427  
 Schnittke, Sidney M. (GP,A) Paradise Rd., Bethel 0427  
 Young, John (GP) Paradise Rd., Bethel 0427

#### HONORARY

Adams, Lester (OO) 9 Knox St., Thomaston 0486  
 Hubbard, Roswell E. (GP) Waterford 0403  
 MacDougall, James A. (GP,D) 303 Penobscot St., Rumford 0427

#### SENIOR

Howard, Henry M. (GP) 105 Franklin St., Rumford 0427  
 Nelson, Chesley W. (GP) Southport 0456

#### JUNIOR

Akerberg, Ake (P,N) Lanewood, Cumberland Foreside 0411  
 Phillips, David L. (GS) 99 Abby Lane, Portland 0411  
 Smith, Charles M. (ORS) 1740 Marco Polo Way, Burlingame, Calif. 94

### PENOBSCOT COUNTY

*President* — Edward L. Curran, M.D.

*Secretary* — Lewis E. Phillips, M.D.

*Treasurer* — Ronald R. Striar, M.D.

#### ACTIVE

Adams, Winford C. (GP) 14 Starlight Dr., Brewer 044  
 Amarin, Jose V., Jr. (PATH) Box 871, Elkins, W. Va. 262  
 Andrews, Robert P. (R) 489 State St., Bangor 044  
 Babcock, Edward B. (IM) 431 State St., Bangor 044  
 Ballesteros, Ernesto G. (NS) 292 Hammond St., Bangor 044  
 Barrett, Robert J., Jr. (A,D) Cor. Union & James Sts., Bangor 044  
 Bjorn, John C. (GP) Hampden Highlands 044  
 Blackwell, William M. (R) Millinocket Com. Hosp., Millinocket 044  
 Blaisdell, Carl E. (U) 336 Mt. Hope Ave., Bangor 044  
 Blaisdell, William B. (OPH,OTO) 209 State St., Bangor 044  
 Boone, Alan W. (IM) 336 Mt. Hope Ave., Bangor 044  
 Bouton, Dale C. (ORS) 157B Broadway, Bangor 044  
 Bridges, Donald E. (OBG) 336 Mt. Hope Ave., Bangor 044  
 Brito, Joseph S. (R) 255 Hammond St., Bangor 044  
 Brown, Eugene E. (A,D) 57 Summit Ave., Bangor 044  
 Brown, Lloyd (GS,TS) 186 State St., Bangor 044  
 Brown, Robert H. (ORS) 35 Second St., Bangor 044  
 Burdick, Robert L. (R) St. Joseph Hosp., Bangor 044  
 Burke, Paul W. (GP) 5 High St., Newport 049  
 Butterfield, Wilfred I. (GP) 119 Main St., Lincoln 044  
 Chase, George O. (PATH) Eastern Maine Med. Ctr., Bangor 044  
 Chason, Sidney (OBG) 128 Broadway, Bangor 044  
 Clement, James D., Jr. (GS) 77 Essex St., Bangor 044  
 Clough, Dexter J., 2nd (OPH) 224 State St., Bangor 044  
 Clough, Herbert T. (AM) R.F.D. No. 1, Box 132, Orrington 044  
 Coulton, Donald (OBG,99) 326 State St., Bangor 044  
 Cross, Harold D. (GP) Main Rd. & Summer St., Hampden Highlands 044  
 Crowe, James H. (ANES) 91 Grove St., Bangor 044  
 Curran, Edward L. (GS) 209 State St., Bangor 044  
 Cutler, Lawrence M. (IM) 31 Grove St., Bangor 044  
 Desjardins, Richard F. (GP) 200 Spruce St., Millinocket 044  
 Dietrich, Mary M. (IM,PD) Box 93, Orrington 044  
 Duffey, Richard V. (ORS) 187 N. Main St., Brewer 044



Dwyer, Clement S. (ANES) 83 Essex St., Bangor 04401  
 Emery, Frederick C. (PD) 242 Cedar St., Bangor 04401  
 Evans, Stanley J. (IM) 336 Mt. Hope Ave., Bangor 04401  
 Eyerer, Rudolf E. (R) 489 State St., Bangor 04401  
 Feeley, J. Robert (U) 438 Garland St., Bangor 04401  
 Fergus, Andrew (P,N) 336 Mt. Hope Ave., Bangor 04401  
 Giles, George E. (U) 454 State St., Bangor 04401  
 Gaillard, Richard A. (OTO) 276 State St., Bangor 04401  
 Gilman, Herbert C. (GP) 200 Spruce St., Millinocket 04462  
 Graves, Robert A. (GP) Sunset Drive, Orono 04473  
 Hall, Walter L. H. (GP,GS) 130 Middle St., Old Town 04468  
 Jamlin, Irvin E. (GP) Main St., E. Millinocket 04430  
 Hill, Allison K. (GS) 431 State St., Bangor 04401  
 Iolzwarth, Hans A. (IM) 336 Mt. Hope Ave., Bangor 04401  
 Ioulihan, John S. (IM) 209 State St., Bangor 04401  
 Hughes, Edward J., Jr. (PD) 336 Mt. Hope Ave., Bangor 04401  
 Hutchins, Deane L. (GP) 10 Frost Lane, Orono 04473  
 Irwin, Carl W. (NS) 336 Mt. Hope Ave., Bangor 04401  
 Irlson, Otis F. (D,A) 478 State St., Bangor 04401  
 Jadi, Francis J. (P,PUD) Bangor State Hosp., Bangor 04401  
 Kawamura, Takeo (P) 336 Mt. Hope Ave., Bangor 04401  
 Kellogg, Robert O. (IM) 431 State St., Bangor 04401  
 Kimball, Philip R. (ORS) 336 Mt. Hope Ave., Bangor 04401  
 Lane, Russell M. (99) 129 Main St., Orono 04473  
 Ladaras, John (GP,P) Bangor State Hosp., Bangor 04401  
 Lanter, Wilbur B. (CD) 1 Fern St., Bangor 04401  
 Larson, Peter H. (GS) Millinocket Com. Hosp., Millinocket 04462  
 LeVoy, Charles D., Jr. (GS,TS) 186 State St., Bangor 04401  
 McGinn, John F. (ORS) 205 French St., Bangor 04401  
 McLean, Preston A. (OBG) 336 Mt. Hope Ave., Bangor 04401  
 McQuoid, Robert M. (OTO,OPH) 39 Columbia St., Bangor 04401  
 Meltzer, Jack N. (IM,CD) 128 Broadway, Bangor 04401  
 Lemmelaar, Joseph E. (U) 431 State St., Bangor 04401  
 Merriam, Thornton W., Jr. (IM) 431 State St., Bangor 04401  
 Metz, Gerald A. (OPH) 336 Mt. Hope Ave., Bangor 04401  
 Miragliuolo, Leonard G. (GS) 10 Maple St., Bangor 04401  
 Moulton, Gardner N. (OPH) 5 Grove St., Bangor 04401  
 Muncie, Richard T. (GS) 336 Mt. Hope Ave., Bangor 04401  
 Nesin, Bourcard (GP) 21 Penobscot Ave., Howland 04448  
 Nettland, Anders T. (OBG) 431 State St., Bangor 04401  
 McKane, Francis R. (GP,ANES) 200 Spruce St., Millinocket 04462  
 Mesler, Jay K. (OPH) 74 Birch St., Bangor 04401  
 Palmer, Thomas H., Jr. (GS) 431 State St., Bangor 04401  
 Parrot, Hadley (IM) 431 State St., Bangor 04401  
 Pasternak, Irwin M. (P) 336 Mt. Hope Ave., Bangor 04401  
 Patton, Roy S. (IM) 336 Mt. Hope Ave., Bangor 04401  
 Pearson, John J. (GP) 100 S. Main St., Old Town 04468  
 Phillips, Lewis E. (IM) 336 Mt. Hope Ave., Bangor 04401  
 Porter, Edward C. (R) 489 State St., Bangor 04401  
 Printon, William A. (OBG) St. Joseph Hosp., Bangor 04401  
 Rasmussen, Thomas W. (GP) Box 128, Lincoln Center 04458  
 Rosenig, David M. (GS,TS) 431 State St., Bangor 04401  
 Sewall, Elmer M. (GP) 14 Park St., Orono 04473  
 Shapiro, Benjamin L. (PD) 431 State St., Bangor 04401  
 Subert, Alice J. (OBG) 125 Leighton St., Bangor 04401  
 Subert, William M. (OBG) 317 State St., Bangor 04401  
 Surman, Hans (GP) 10 Spring St., Dexter 04930  
 Tenth, Hugh A. (R) Eastern Maine Med. Ctr., Bangor 04401  
 Tiar, Ronald R. (PD) 94 Essex St., Bangor 04401  
 Trout, Warren G. (ANES) 83 Essex St., Bangor 04401  
 Tylor, H. Lewis (GP) 25 Church St., Dexter 04930  
 Thomas, Philip B. (ANES) 83 Essex St., Bangor 04401  
 Townbridge, Mason, Jr. (IM) 142 Pine St., Bangor 04401  
 Tson, Dudley B. (ANES) 91 Grove St., Bangor 04401  
 Tickers, Martyn A. (A,D) 268 State St., Bangor 04401  
 Tudas, Joseph (GP) Bangor State Hosp., Bangor 04401  
 Tadsworth, Richard C. (PATH) 489 State St., Bangor 04401  
 Wagner, Samuel L. (GP) 2 Holmes St., Winterport 04496  
 Weisz, Hans (GP) 17 Sunrise Ter., Orono 04473  
 Wise, Joe R., Jr. (C) 1 Fern St., Bangor 04401  
 Wood, George W., III (IM,PUD) 156 No. Main St., Brewer 04412  
 Woodcock, John A. (ORS) 35 Second St., Bangor 04401

#### HONORARY

Evans, Thomas A. (OO) Palm Shores West, Apt. G-8, 830 North Shore Dr., St. Petersburg, Fla. 33701  
 Gerson, W. Merritt (GP,CD) 131 State St., Bangor 04401  
 Gedin, Carl J. (OO) 20 South Rd., Brewer 04412  
 Woodcock, Allan (OO) 35 Second St., Bangor 04401

#### SENIOR

Jams, Asa C. (GS) 68 Main St., Orono 04473  
 Ktler, Harry (OTO) 77 Broadway, Bangor 04401  
 Kham, Rand A. (OO) 42 Mountain View Ter., Rye, N.H. 03870

#### PISCATAQUIS COUNTY

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#### ACTIVE

Bradbury, Francis W. (GP) 16 E. Main St., Dover-Foxcroft 04426  
 Cornell, Robert C. (ORS) Box 518, Greenville 04441  
 Curtis, John B. (GP) 10 High St., Milo 04463  
 Garcia-Rey, Felix M. (GP) 4604 No. St. Vincent St., Tampa, Fla. 33614  
 Howard, George C. (GP) Oak St., Guilford 04443  
 Lightbody, Charles H. (GP) No. Main St., Guilford 04443  
 Nelson, Isaac (GP) Box 506, Greenville 04441  
 Nielsen, Odd S. (AM,99) 120 Hudson Rd., Bangor 04401  
 Rodriguez, Araminta M. (GP) 4604 No. St. Vincetn St., Tampa, Fla. 33614  
 Stitham, Linus J. (GP,OBG) 50 Main St., Dover-Foxcroft 04426

#### HONORARY

Bundy, Harvey C. (OO) 702 Kennebec St., Rumford 04276  
 Nickerson, Norman H. (GP) Greenville 04441  
 Pritham, Fred J. (GP) Greenville Jct. 04442  
 Stanhope, Charles N. (OO) South St., Dover-Foxcroft 04426  
 Wyman, Edwin T. (OO) 1110 Beacon St., Brookline, Mass. 02146

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Amrein, H. Carl (GP,GS) 29 Weston Ave., Madison 04950  
 Briggs, Paul R. (GS) Hartland 04943  
 Dow, John P. (GP) Grove Hill, Pittsfield 04967  
 Hoch, Gretl J. (GP) Phillips 04966  
 Hornstein, Louis S. (GP) 220 Water St., Skowhegan 04976  
 Jordan, W. Edward, Jr. (GS) Fairview Hosp., Skowhegan 04976  
 Kemezys, Kestutis M. (GP,ANES) 25 Garfield St., Madison 04950  
 Laney, Richard P. (IM) 50 Water St., Skowhegan 04976  
 McIntire, Percy C. (PUD) Central Maine San., Fairfield 04937  
 Reed, Howard L. (GS) 235 Madison Ave., Skowhegan 04976  
 Richards, Henry H. (GP) Jackman 04945  
 Smith, Edgar J. (GP) 1 Park St., Fairfield 04937  
 Steeves, John H. (R) Rt. 3, Skowhegan 04976  
 Stein, Ernest W. (GP) 72 Main St., Pittsfield 04967  
 Strickland, Marian L. (GP) Easy St., Canaan 04924  
 Sullivan, George E. (ANES) 86 Summer St., Waterville 04901  
 Swett, Carlton E. (GS) 21 Fairview Ave., Skowhegan 04976  
 Sy, Vincente L. (GP,U) Milford Ave., Bingham 04920  
 Szendey, Andrew M. (GP,PD) 26 Gray St., Madison 04950  
 Turner, Harland G. (GP,ANES) Box 38, Norridgewock 04957

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Lord, Maurice E. (OO) Box 537, Lake Placid, Fla. 33852  
 Southworth, John D. (R) Hartland 04943  
 Webber, Merlon A. (GP) 33 Lancey St., Pittsfield 04967

#### SENIOR

Ball, Franklin P. (GP,R) Bingham 04920  
 Philbrick, Maurice S. (OO) 3349 N.W. 32nd Crt., Fort Lauderdale, Fla. 33309

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 Hanbury, Euclid M. Jr., (GS) Medical Bldg., Belfast 04915  
 Knuuti, Harold E. (IM) Medical Bldg., Belfast 04915  
 Layton, M. Lewis (GP) 1 Seaview Ter., Belfast 04915  
 Lecher, Robert C. (GP) Medical Bldg., Belfast 04915  
 Raia, Theodore J., Jr. (R) Waldo County Gen. Hosp., Belfast 04915  
 Temple, George L. (GS,ORS) Fahey St., Belfast 04915  
 Webber, John R. (GP) 6 Northport Ave., Belfast 04915

#### HONORARY

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 Stevens, Carl H. (GP) 18 Franklin St., Belfast 04915

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Kiel, Joseph B. (P)	Columbia Falls	04623
Larson, Karl V. (GP)	E. Machias	04630
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Mason, Sabry E. (GP)	Main St., Calais	04619
McAllister, John W. (GP,R)	Box 38, Lubec	04652
Mitchell, Hazen C. (GP,GS)	Calais	04619
Nackley, George N. (GP,GS)	1 School St., Machias	04654
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Sears, Harold G. (GP,OM)	Second Ave., Woodland	04694
Stott, Nelson W. (GP)	County Rd., Eastport	04631
Vibber, Foster L. (N,P)	West Jonesport	04649

## HONORARY

Bennet, DaCosta F. (GP)	4 Main St., Lubec	04652
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## SENIOR

Mundie, Perley J. (OTO)	32 North St., Calais	04619
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\*Broadway, Machias 04654 (Nonmember of M.M.A.)

# YORK COUNTY

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Secretary-Treasurer — Charles W. Kinghorn, M.D.

Asst. Secretary-Treasurer — Melvin Bacon, M.D.

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Charest, Leandre R. (GS)	314 Alfred St., Biddeford	04005
Cuneo, Kenneth J. (ANES)	31 Summer St., Kennebunk	04043
Dionne, William E. (GP,GS)	75 Main St., Springvale	04083
Dorfman, Irvin (PATH)	Webber Hosp., Biddeford	04005
Downing, J. Robert (GP)	11 Partridge Lane, Kennebunk	04043
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Fortier, Andre P. (GP,OBG)	68 Foss St., Biddeford	04005
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Haq, Badi Z. (PATH)	Webber Hosp., Biddeford	04005
Hazzard, Lawrence R. (ANES)	Cider Hill Rd., York	03909
Hill, Paul S., Jr. (GP,GS)	323 Main St., Saco	04072

Hoffman, Alvin A. (GP)	Box 38, York	039C
Hopkins, Herbert J. (GP,A)	24 Portland Ave., Old Orchard Beach	0406
Houle, Marcel P. (GP,GS)	200 Alfred St., Biddeford	040C
Johnston, James S. (GP,GS)	258 Main St., Saco	0407
Kothari, Nauttam J. (IM,P)	120 East 36th St., New York, N.Y.	1001
LaFond, Robert S. (IM)	258 Main St., Saco	0407
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Lapirow, Harry (IM)	99 Main St., Kennebunk	0404
Leigh, Kenneth E. (R)	Brixham Rd., York	039C
Linourt, Armand S. (GP)	122 Main St., Sanford	0407
Lord, George A. (GS)	27 June St., Sanford	0407
Magaudda, Michael M. P. (GP,GS)	39 Old Orchard St., Old Orchard Beach	0406
Magosi, Alexander W. (GP)	York	039C
Moore, Conner M. (PD)	372 Main St., Saco	0407
Moulton, Marion K. (GP)	W. Newfield	0409
Murphy, John J. (IM)	84 Portland St., So. Berwick	0390
Nieuwkerk, Willem F. (P)	Box 424, Kennebunkport	0404
O'Sullivan, William B. (GP,OBG)	Box 645, Biddeford	0400
Palmer, Mahlon P. (OTO)	Nasson College, Springvale	0408
Patane, Joseph M. (GP,GS)	256 Alfred St., Biddeford	0400
Perrault, Oscar W. (GP)	30 South St., Biddeford	0400
Peterlein, Welter R., Jr. (GP)	75 Main St., Springvale	0408
Richards, Carl E. (GP)	27 June St., Sanford	0407
Robert, Roger J. P. (ORS)	258 Main St., Saco	0407
Ross, Maurice (PD)	372 Main St., Saco	0407
Roussin, William T. (GP,CD)	48 Bacon St., Biddeford	0400
Shaw, G. Patrick (OBG)	275 Main St., Biddeford	0400
Smith, Gerald R. (GP)	Ogunquit	0390
Smith, Oney P. (GP)	Post Road, Wells	0409
Taylor, Paul E. (GP)	9 Wentworth St., Kittery	0390
Troop, Donald E. (GP)	75 Main St., Springvale	0408
Turville, Charles S. (ANES)	Box 187, Alfred	0400
Vachon, Robert D. (GP)	34 Winter St., Sanford	0407
Viger, Leopold A. (IM,CD)	10 Amherst St., Biddeford	0400
Yeon, Hyung, J. (P)	Station A	1259

Harlem Valley State Hosp., Wingdale, N. Y.

## HONORARY

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Davis, Ansel S. (OO)	Springvale	0408
Kinghorn, Charles W. (GP,OTO)	4 Wentworth St., Kittery	0390
Stevens, Harold W. (OO)	369 Ferry Rd., Saco	0407
Whitney, Ray L. (P)	Cape Porpoise	0401

## SENIOR

Sandvoss, Herman G. (OM)	Union St., Kennebunkport	0404
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## JUNIOR

Berger, Steven (P)	Station B, Poughkeepsie, N.Y.	1260
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## SERVICE

Jellerson, Leon R. (GPM)	U.S.C.G. Training Ctr., May, N.J.	0820
Wieting, William F. (IM)	Box 462, York Harbor	0391



# An Alphabetical List of the Members of the Maine Medical Association

The figures in parentheses refer to County Societies as follows: (1) Androscoggin, (2) Aroostook, (3) Cumberland, (4) Franklin, (5) Hancock, (6) Kennebec, (7) Knox, (8) Lincoln-Sagadahoc, (9) Oxford, (10) Penobscot, (11) Piscataquis, (12) Somerset, (13) Waldo, (14) Washington, (15) York.

- Adams, Asa C., 68 Main St., Orono 04473 (10)  
 Adams, Lester, 9 Knox St., Thomaston 04861 (9)  
 Adams, Marvin C., 25 Bramhall St., Portland 04102 (3)  
 Adams, Winford C., 14 Starlight Dr., Brewer 04412 (10)  
 Agan, Robert W., 144 State St., Portland 04101 (3)  
 Akar, Hamdi, 37 Oak St., Bath 04530 (8)  
 Akerberg, Ake, Lanewood, Cumberland Foreside 04110 (9)  
 Albert, Rodrigue J., 9 Pleasant St., Fort Kent 04743 (2)  
 Albrow, Ward A., County Rd., Houlton 04730 (2)  
 Alexander, Fay K., Lincolnville 04849 (7)  
 Aillin, Fleuterio S., 1 Main St., Chisholm 04222 (4)  
 Allen, Donald E., 95 West St., Portland 04102 (3)  
 Allison, Horace R., 555 Main St., Presque Isle 04769 (2)  
 Allport, Robert B., Box C, Pownal 04069 (3)  
 Amfilo, Basil, 626 Main St., Lewiston 04240 (1)  
 Amarin, Jose V., Jr., Box 871, Elkins, W. Va. 26241 (10)  
 Amrein, H. Carl, 29 Weston Ave., Madison 04950 (12)  
 Anderson, Donald L., 369 Main St., Lewiston 04240 (1)  
 Anderson, Dorothy, 369 Main St., Lewiston 04240 (1)  
 Anderson, John B., Dudley Coe Inf., Bowdoin College, Brunswick 04011 (3)  
 Andrews, Anneliese M., Maine Medical Ctr., Portland 04102 (3)  
 Andrews, John F., 67 Oak St., Boothbay Harbor 04538 (8)  
 Andrews, Robert P., 489 State St., Bangor 04401 (10)  
 Ansell, Harvey B., 39 Deering St., Portland 04101 (3)  
 Anton, Thomas, 5 Graham St., Biddeford 04005 (15)  
 Apollonio, Howard L., Box 34, Rockport 04856 (7)  
 Applin, Hilton H., 6 Cumberland St., Brunswick 04011 (3)  
 Aranson, Albert, Maine Medical Ctr., Portland 04102 (3)  
 Archambault, John L., University Park Apts, 13A, Orono 04473 (1)  
 Archambault, Philip L., 346 Main St., Lewiston 04240 (1)  
 Armstrong, Paul E., No. Main St., Kingfield 04947 (4)  
 Asali, Louis A., 29 Deering St., Portland 04101 (3)  
 Ashley, Alta, Box 87, Monhegan Island 04852 (7)  
 Atallah, Antoine A., 58 Elm St., Waterville 04901 (6)  
 Aucoin, Peter B., 151 Franklin St., Rumford 04276 (9)  
 Augst, Melvin R., Morneault Building, Fort Kent 04743 (2)  
 Austin, William H., 22 Bramhall St., Portland 04102 (3)  
 Avantaggio, Frank O., Jr., Bristol Rd., Damariscotta 04534 (8)
- Babalian, Leon, 645 Congress St., Portland 04101 (3)  
 Babcock, Edward B., 431 State St., Bangor 04401 (10)  
 Babcock, Harold S., Castine 04421 (5)  
 Bacastow, Merle S., 640 So. Grandview Lane, Lake Forest, Ill. 60045 (3)  
 Bachrach, Louis, 65 Baribeau Dr., Brunswick 04011 (3)  
 Bachulus, John M., 3 Breckan Rd., Brunswick 04011 (8)  
 Bacon, Melvin, 122 Main St., Sanford 04073 (15)  
 Baldini, Elio, 22 Bramhall St., Portland 04102 (3)  
 Baldwin, Warren C., 42 Deering St., Portland 04101 (3)  
 Ball, Franklin P., Bingham 04920 (12)  
 Ballard, Jeanne L., 6128 Ridgeacres Dr., Cincinnati, Ohio 45237 (2)  
 Ballesteros, Ernesto G., 292 Hammond St., Bangor 04401 (10)  
 Barnard, John M. H., Doctors Park, 89 Hosp. St., Augusta 04330 (6)  
 Barnes, Kirk K., Baribeau Dr., Brunswick 04011 (3)  
 Barrett, Robert J., Jr., Cor. Union & James Sts., Bangor 04401 (10)  
 Barron, Martin A., Jr., 37 Deering St., Portland 04101 (3)  
 Barron, Richard E., Western Ave., Winthrop 04364 (6)  
 Bates, James C., Eastport 04631 (14)  
 Bauman, Clair S., 159 Silver St., Waterville 04901 (6)  
 Bean, Achsa M., Star Route 32, Owl's Head 04854 (7)  
 Bean, H. Richard, 241 Main St., Norway 04268 (9)  
 Beckerman, Stanley C., 175 Silver St., Waterville 04901 (6)  
 Beeker, Vincent H., 85 Wood St., Lewiston 04240 (1)  
 Beegel, Paul M., 185 Webster St., Lewiston 04240 (1)  
 Beliveau, Bertrand A., 56 Howe St., Lewiston 04240 (1)  
 Belknap, Samuel L., Damariscotta 04543 (8)  
 Belmont, Ralph S., 6 Washington St., Sanford 04073 (15)  
 Bennet, DaCosta F., 4 Main St., Lubec 04652 (14)  
 Bennet, Eben T., 49 Deering St., Portland 04101 (3)  
 Berger, Steven, Station B, Poughkeepsie, N. Y. 12602 (15)  
 Bettie, Ronald A., Parkview Professional Bldg., Brunswick 04011 (3)  
 Betts, Anthony, Thayer Hospital, Waterville 04901 (6)  
 Bhatnagar, Hemendra N., 67 Silver St., Waterville 04901 (6)  
 Bidwell, Robinson L., 31 Bramhall St., Portland 04102 (3)  
 Bischoffberger, John M., Naples 04055 (3)  
 Bjorn, John C., Hampden Highlands 04445 (10)  
 Blackburn, Nelson P., Bath Memorial Hosp., Bath 04530 (8)  
 Blackwell, William M., Millinocket Com. Hosp., Millinocket 04462 (10)  
 Blaisdell, Carl E., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Blaisdell, Elton R., 233 Vaughan St., Portland 04102 (3)  
 Blaisdell, William B., 209 State St., Bangor 04401 (10)
- Bliss, Harry A., 39 Deering St., Portland 04101 (3)  
 Blumberg, Edward, 6316 Strickland Ave., Brooklyn, N. Y. 11234 (3)  
 Bolduc, Jean L., 325 Kennedy Dr., Waterville 04901 (6)  
 Bonney, James H., 53 Chadwick St., Portland 04102 (3)  
 Boone, Alan W., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Boone, Storer W., 54 Third Ave., Presque Isle 04769 (2)  
 Bostwick, George W., Box 388, Newcastle 04553 (8)  
 Bourassa, Harvey J., 47 Elm St., Waterville 04901 (6)  
 Bouton, Dale C., 157B Broadway, Bangor 04401 (10)  
 Bove, Louis G., 233 Vaughan St., Portland 04102 (3)  
 Bowman, Peter W., Box C, Pownal 04069 (3)  
 Bowne, Hays G., 9A Main St., Farmington 04938 (4)  
 Bradbury, Francis W., 16 E. Main St., Dover-Foxcroft 04426 (11)  
 Branch, Charles F., 69 Gamage Ave., Auburn 04210 (1)  
 Brann, Henry A., 31 Western Ave., Augusta 04330 (6)  
 Branson, Sidney R., 37 Main St., South Windham 04082 (3)  
 Bridges, Donald E., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Briggs, Paul R., Hartland 04943 (12)  
 Briggs, Russell C., Maine Medical Ctr., Portland 04102 (3)  
 Briggs, Winton, 291-A Ocean House Rd., Cape Elizabeth 04107 (3)  
 Brinkman, Carl A., 31 Bramhall St., Portland 04102 (3)  
 Brinkman, Harry, 47 Perham St., Farmington 04938 (4)  
 Brinkman, Paul A., Farmington 04938 (4)  
 Britt, Richard W., Blue Hill 04614 (5)  
 Britt, Robert C., 108 Elm St., Camden 04843 (7)  
 Brito, Joseph S., 255 Hammond St., Bangor 04401 (10)  
 Broggi, Frank S., 18 Neal St., Portland 04102 (3)  
 Bromley, William C., 2400 Smiley Way, Jackson, Mich. 49203 (5)  
 Brouwer, Johan, 5 Beech St., Rockland 04841 (7)  
 Brown, Douglas H., 548 Shore Rd., Cape Elizabeth 04107 (3)  
 Brown, Eugene E., 57 Summit Ave., Bangor 04401 (10)  
 Brown, Lloyd, 186 State St., Bangor 04401 (10)  
 Brown, Robert H., 35 Second St., Bangor 04401 (10)  
 Brown, Stephen S., Mars Hill 04758 (2)  
 Brownlow, Bradley E., Blue Hill Mem. Hosp., Blue Hill 04614 (5)  
 Budd, William L., Parkview Professional Bldg., Brunswick 04011 (3)  
 Buell, William O., 357 Elm St., Biddeford 04005 (15)  
 Bull, Frank B., 5 Hasson St., Hallowell 04347 (6)  
 Bullington, Sunny J., 56 Baribeau Dr., Brunswick 04011 (3)  
 Bundy, Harvey C., 702 Kennebec St., Rumford 04276 (11)  
 Bunker, Willard H., York Harbor 03911 (15)  
 Burden, Charles E., 1 North St., Bath 04530 (8)  
 Burdick, Robert L., St. Joseph Hosp., Bangor 04401 (10)  
 Burke, John N., 144 State St., Portland 04101 (3)  
 Burke, Paul W., 5 High St., Newport 04953 (10)  
 Burnett, Claude A., Jr., 59 Deering St., Portland 04101 (3)  
 Burnham, Harold N., 130 Main St., Gorham 04038 (3)  
 Burns, Robert M., Box 151, Westbrook 04092 (3)  
 Burr, Charles G., 21 Court St., Houlton 04730 (2)  
 Busch, John J., 105 Elm St., Mechanic Falls 04256 (1)  
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 Butterfield, Wilfred I., 119 Main St., Lincoln 04457 (10)
- Cabelin, Miguelito A., 344 Main St., Lewiston 04240 (1)  
 Callahan, Robert L., 12 Spruce St., Augusta 04330 (6)  
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 Campbell, Fred G., Box 484, Warren 04864 (7)  
 Canal, Ory D., 193 Cony St., Augusta 04330 (6)  
 Capron, Charles W., 22 Bramhall St., Portland 04102 (3)  
 Caron, Frederic J., 21 Champlain Ave., Lewiston 04240 (1)  
 Carrier, John W., Central Maine Gen. Hosp., Lewiston 04240 (1)  
 Carroll, Ronald J., 255 Western Prom., Portland 04102 (3)  
 Carson, Robert S., Baribeau Dr., Brunswick 04011 (3)  
 Carton, Arthur K., 7 Park St., Houlton 04730 (2)  
 Casey, William L., 131 State St., Portland 04101 (3)  
 Castellanos, Jose, Augusta State Hosp., Augusta 04330 (6)  
 Caswell, John A., 16 Waldo Ave., Belfast 04915 (13)  
 Chamberlin, Richard T., Thayer Hospital, Waterville 04901 (6)  
 Chapin, Milan A., 237 Turner St., Auburn 04210 (1)  
 Charest, Leandre R., 314 Alfred St., Biddeford 04005 (15)  
 Chase, George O., Eastern Maine Med. Ctr., Bangor 04401 (10)  
 Chason, Sidney, 128 Broadway, Bangor 04401 (10)  
 Chasse, Richard L., 18 Park St., Waterville 04901 (6)  
 Chatterjee, Manu, 295 Water St., Augusta 04330 (3)  
 Chen, John T., Cherry Hill Ter., Waterville 04901 (6)  
 Christensen, Harry E., South Freeport 04078 (3)  
 Ciampi, Louis A., 326 Stevens Ave., Portland 04103 (3)  
 Ciembroniewicz, Julius E., 18 Spruce St., Augusta 04330 (6)  
 Clapp, Waldo A., 215 College St., Lewiston 04240 (1)  
 Clapperton, Gilbert, 300 Main St., Lewiston 04240 (1)



Clark, Frederick B., 131 State St., Portland 04101 (3)  
 Clarke, Charles N., 108 Elm St., Camden 04843 (7)  
 Clarkin, Charles P., 64 Brookside Rd., Portland 04103 (3)  
 Clason, Walton P. C., 12 Pleasant St., Ellsworth 04605 (5)  
 Clement, James D., Jr., 77 Essex St., Bangor 04401 (10)  
 Clough, Dexter J., 2nd, 224 State St., Bangor 04401 (10)  
 Clough, Herbert T., R.F.D. No. 1, Box 132, Orrington 04474 (10)  
 Cloutier, Wilfrid A., 646 Main St., Lewiston 04240 (1)  
 Cobb, Norman E., Medical Bldg., Belfast 04915 (13)  
 Coffin, Ernest L., Northeast Harbor 04662 (5)  
 Cohen, Abram I., Smith St., Harrison 04040 (3)  
 Cole, Donald P., 45 Deering St., Portland 04101 (3)  
 Colley, Maynard B., 14 Main St., Farmington 04938 (4)  
 Collins, H. Douglas, Caribou Clinic, Caribou 04736 (2)  
 Condit, Roger E., Box 711, Farmington 04938 (4)  
 Conneen, Thomas F., 131 Chadwick St., Portland 04102 (3)  
 Conner, William W., Waterman Mem. Hosp., Eustis, Fla. 32726 (8)  
 Contartese, Michael, 149 Main St., Freeport 04032 (3)  
 Conway, Kevin, Rumford Com. Hosp., Rumford 04276 (9)  
 Cook, Aaron, 23 High St., Waterville 04901 (6)  
 Cooper, Llewellyn W., Hancock St., Bar Harbor 04609 (5)  
 Cope, Sara K., 265 Western Prom., Portland 04102 (3)  
 Cornell, Robert C., Box 518, Greenville 04441 (11)  
 Coulton, Donald, 326 State St., Bangor 04401 (10)  
 Crane, Lawrence, 157 Pine St., Portland 04102 (3)  
 Crawford, Albert S., 7483 Deep Run Rd., Birmingham, Mich. 48010 (6)  
 Crawford, Joseph R., 12 Spruce St., Augusta 04330 (6)  
 Cross, Harold D., Main Rd. & Summer St., Hampden Highlands 04445 (10)  
 Crowe, James H., 91 Grove St., Bangor 04401 (10)  
 Cruickshank, Frank S., Jr., Eaton Dr., Waterville 04901 (6)  
 Culver, Raymond E., 14 Gilman St., Waterville 04901 (6)  
 Cummings, Paul H., 181 Russell St., Lewiston 04240 (1)  
 Cummings, George O., Sr., 47 Deering St., Portland 04101 (3)  
 Cummings, George O., Jr., 47 Deering St., Portland 04101 (3)  
 Cuneo, Kenneth J., 31 Summer St., Kennebunk 04043 (15)  
 Cunningham, Alice N., Parkview Professional Bldg., Brunswick 04011 (3)  
 Curran, Edward L., 209 State St., Bangor 04401 (10)  
 Curtin, Daniel C., 555 Main St., Presque Isle 04769 (2)  
 Curtis, John B., 10 High St., Milo 04463 (11)  
 Curtis, Winifred W., Bailey Island 04003 (3)  
 Cutler, Lawrence M., 31 Grove St., Bangor 04401 (10)

Dachslager, Philip, 8 Green St., Augusta 04330 (6)  
 Dalrymple, Sidney C., So. Great Rd., So. Lincoln, Mass. 01751 (8)  
 D'Andrea, Anthony L., 171 State St., Portland 04101 (3)  
 Darby, Alfred E., Jr., Rt. 1, Box 426, Scarborough 04074 (3)  
 Darlington, Brinton T., Doctors Park, 89 Hosp. St., Augusta 04330 (6)  
 Davidson, David, 235 State St., Portland 04101 (3)  
 Davidson, Gisela K., 235 State St., Portland 04101 (3)  
 Davies, Lloyd G., 249 Ocean House Rd., Cape Elizabeth 04107 (3)  
 Davis, Ansel S., Springvale 04083 (15)  
 Davis, Earle M., 325 Kennedy Dr., Waterville 04901 (6)  
 Davis, Paul V., 94 Main St., Bridgton 04009 (3)  
 Davy, Carmel L., Webber Hosp., Biddeford 04005 (3)  
 Davy, John R., 61 Thomas St., Portland 04102 (3)  
 DeCosta, Donald A., Poland Spring 04274 (1)  
 DeHart, Cor, Thayer Hospital, Waterville 04901 (6)  
 Delaney, Frederick G., 130 Main St., Gorham 04038 (3)  
 Deming, Howard R., Maine Medical Ctr., Portland 04102 (3)  
 Denison, John D., 89 Hospital St., Augusta 04330 (6)  
 Dennis, Richard H., 325A Kennedy Dr., Waterville 04901 (6)  
 Dennison, Frederick C., 3 Gilchrist St., Thomaston 04861 (7)  
 Derry, G. Hermann, 690 Congress St., Portland 04102 (3)  
 Desjardins, Richard F., 200 Spruce St., Millinocket 04462 (10)  
 Devan, Thomas A., Palm Shores West, Apt. G-8, 830 North Shore Dr., St. Petersburg, Fla. 33701 (10)  
 Dewing, Stephen B., R.F.D. No. 2, Harrison 04040 (9)  
 Diehl, William H., Jr., 325B Kennedy Mem. Dr., Waterville 04901 (6)  
 Dietrich, Mary M., Box 93, Orrington 04474 (10)  
 Dillihunt, Richard C., 7 Bramhall St., Portland 04102 (3)  
 Dinan, John T., Jr., 7 Bramhall St., Portland 04102 (3)  
 Dionne, Maurice J., Baribeau Dr., Brunswick 04011 (3)  
 Dionne, William E., 75 Main St., Springvale 04083 (15)  
 Dixon, David C., Box 792, Farmington 04938 (4)  
 Dixon, Walter G., 16 Deering St., Norway 04268 (9)  
 Doble, Miriam, 990 Washington St., Bath 04530 (8)  
 Doby, Tibor, Mercy Hosp., Portland 04101 (3)  
 Dole, Richard R., 325 Kennedy Dr., Waterville 04901 (6)  
 Donahue, Clement L., 22 Sweden St., Caribou 04736 (2)  
 Donahue, Gerald H., 4 Station St., Presque Isle 04769 (2)  
 Dooley, Francis M., 41 Kenwood St., Portland 04102 (3)  
 Dore, Clarence E., 2 School St., Waterville 04901 (6)  
 Dore, Kenneth E., 133 Main St., Fryeburg 04037 (3)  
 Dorfman, Irvin, Webber Hosp., Biddeford 04005 (15)  
 Dorogi, Louis V., Old Post Rd., Rt. 138, Bowdoinham 04008 (8)  
 Dougherty, John F., 112 Front St., Bath 04530 (8)

Douphinett, Otis J., 763 Congress St., Portland 04102 (3)  
 Dow, John P., Grove Hill, Pittsfield 04967 (12)  
 Downing, J. Robert, 11 Partridge Lane, Kennebunk 04043 (15)  
 Drake, Emerson H., 18 Bramhall St., Portland 04102 (3)  
 Drexler, James E., Ward Town Rd., Freeport 04032 (3)  
 Drummond, S. Dunton, Bar Mills 04004 (15)  
 Duffey, Richard V., 187 North Main St., Brewer 04412 (10)  
 Duffy, Wallace H., 100 Main St., Farmington 04938 (4)  
 DuMais, Alcid F., 73 High St., South Paris 04281 (9)  
 Dunham, Marguerite C., R.F.D. No. 1, Dresden 04342 (2)  
 Dunham, Rand A., 42 Mountain View Ter., Rye, N.H. 03870 (10)  
 Dunn, Robert H., Veterans Adm., Togus 04330 (6)  
 Dwyer, Clement S., 83 Essex St., Bangor 04401 (10)  
 Dycio, George, 300 Pine St., Lewiston 04240 (1)  
 Dycio, Mary T., 3 Bayberry Lane, Lewiston 04240 (1)  
 Dyhrberg, Norman E., Box 76, R.F.D. No. 4, Portland 04110 (3)

Earle, Ralph P., Vinalhaven 04863 (7)  
 Earnhardt, Joseph B., Hammond Rd., Westbrook 04092 (3)  
 Eastman, Charles W., 15 Millet St., Livermore Falls 04254 (4)  
 Ebersbach, David L., Qtrs 6, NAS, Brunswick 04011 (6)  
 Eddy, Robert H., 5 Beech St., Rockland 04841 (7)  
 Edgar, Joseph H., Jr., 128 Chadwick St., Portland 04102 (3)  
 Edouard, Julio, Box C, Pownal 04069 (1)  
 Egan, John F., 810 Penobscot St., Rumford 04276 (9)  
 Eisberg, Harry B., 357 Elm St., Biddeford 04005 (15)  
 Ekinici, Fevzi, 42 Main St., Livermore Falls 04254 (4)  
 Elkins, Alan M., Maine Medical Ctr., Portland 04102 (3)  
 Ellington, Eric E., 12 Spruce St., Augusta 04330 (6)  
 Elsmore, Dexter E., 11 Main St., Dixfield 04224 (9)  
 Emanuel, Meyer, Veterans Adm., Togus 04330 (6)  
 Emerson, W. Merritt, 131 State St., Bangor 04401 (10)  
 Emery, Frederick C., 242 Cedar St., Bangor 04401 (10)  
 Endicott, Ruth E., Grasshopper Lane, Ogunquit 03907 (15)  
 English, Wesley J., Hancock St., Bar Harbor 04609 (5)  
 Ervin, Edmund N., 2 School St., Waterville 04901 (6)  
 Evans, Peter A., 65 Baribeau Dr., Brunswick (8)  
 Evans, Richard, III, Maine Medical Ctr., Portland 04102 (8)  
 Evans, Stanley J., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Eyerer, Rudolf E., 489 State St., Bangor 04401 (10)

Fakhery, Behzad, 111 Webster St., Lewiston 04240 (3)  
 Fanning, Joseph P., Central Maine Gen. Hosp., Lewiston 04240 (1)  
 Feagin, Oscar T., Dept. of Health & Welfare, Augusta 04330 (6)  
 Feeley, J. Robert, 438 Garland St., Bangor 04401 (10)  
 Fenger, John R., 241 Main St., Norway 04268 (9)  
 Fergus, Andrew, 336 Mt. Hope Ave., Bangor 04401 (10)  
 Ferguson, Barbara, Rt. 4, Box 238A, Old Danville Rd., Auburn 0421  
 Ferguson, Franklin F., 22 Bramhall St., Portland 04102 (3)  
 Fichtner, Paul A., 10 Oak Grove Ave., Bath 04530 (8)  
 Ficker, Robert F., Maine St., Kennebunkport 04046 (15)  
 Field, Richard L., Shelburne, Vt. 05482 (5)  
 Fife, James L., 65 Baribeau Dr., Brunswick 04011 (3)  
 Files, George E., 454 State St., Bangor 04401 (10)  
 Finks, Henry B., 73 Deering St., Portland 04101 (3)  
 Fiorica, Gaetano T., 12 Church St., Chisholm 04222 (4)  
 Fish, Nicholas, 12 Sturdivent Rd., Cumberland Foreside 04110 (3)  
 Fisher, Dean H., State House, Augusta 04330 (6)  
 Fisher, Samson, 26 College Ave., Waterville 04901 (6)  
 Fishman, Louis N., 185 Webster St., Lewiston 04240 (1)  
 Fite, Marcia, Pemaquid Point 04558 (8)  
 Flanders, Merton N., 1 High St., Lewiston 04240 (1)  
 Floyd, Paul E., 2 Middle St., Farmington 04938 (4)  
 Fogg, C. Eugene, 35 Deering St., Portland 04101 (3)  
 Fortier, Andre P., 68 Foss St., Biddeford 04005 (15)  
 Fortier, Paul J., 111 Webster St., Lewiston 04240 (1)  
 Fox, Francis H., 83 West St., Portland 04102 (3)  
 Foy, I. Howard, Arthur R. Gould Mem. Hosp., Presque Isle 04769 (2)  
 Freeman, William E., 107 Main St., Yarmouth 04096 (3)  
 French, Rowland B., 16 Water St., Eastport 04631 (14)  
 Frigault, Emile J., Main St., Dixfield 04224 (9)  
 Frost, Robert A., 93 Summer St., Auburn 04210 (1)  
 Fuller, Barbara L., 20 Chestnut St., Rockland 04841 (7)  
 Fuller, George G., 50 Union St., Ellsworth 04605 (5)  
 Furman, Robert S., 22 White St., Rockland 04841 (7)

Gaillard, Richard A., 276 State St., Bangor 04401 (10)  
 Galarraga, Efraim C., Augusta State Hosp., Augusta 04330 (6)  
 Galen, Robert S., 6 Breckan Rd., Brunswick 04011 (3)  
 Ganguli, Adwaita K., 191 Lincoln Ave., Rumford 04276 (9)  
 Garcia-Rey, Felix M., 4604 No. St. Vincent St., Tampa, Fla. 33614 ( )  
 Garnett, James H. P., Northeast Harbor 04662 (5)  
 Gashgai, Abdollah S., Chisholm (4)  
 Gates, Clifford W., (CDR)  
 MC, USN, Naval Hospital, Camp Pendleton, Calif. 92055 ( )  
 Gauvreau, Norman O., 78 Pine St., Lewiston 04240 (1)



, Charles R., 208 Vaughan St., Portland 04102 (3)  
 , George I., Jr., 208 Vaughan St., Portland 04102 (3)  
 es, Kendall A., Kimball Rd., Northeast Harbor 04662 (5)  
 hell, Ralph A., 14 Elmwood Rd., Cape Elizabeth 04107 (3)  
 rhahn, George, 73 Deering St., Portland 04101 (3)  
 ons, John F., 22 Bramhall St., Portland 04102 (3)  
 rson, Raymond G., 156A Academy St., Presque Isle 04769 (2)  
 ings, Paul D., 31 Western Ave., Augusta 04330 (6)  
 en, Joseph H., 34 Gilman St., Waterville 04901 (6)  
 ere, Eustache N., 90 Webster St., Lewiston 04240 (1)  
 an, Herbert C., 200 Spruce St., Millinocket 04462 (10)  
 ras, Napoleon J., 6 East Chestnut St., Augusta 04330 (6)  
 rtz, Bernard, 131 Chadwick St., Portland 04102 (3)  
 smile, Charles R., 37 Deering St., Portland 04101 (3)  
 k, Kenneth A., Hospital Dr., Bridgton 04009 (3)  
 oe, John A., 7 Bramhall St., Portland 04102 (3)  
 tti, Richard J., 9 Deering St., Portland 04101 (3)  
 farb, Walter B., 72 West St., Portland 04102 (3)  
 l, Philip G., 54 Edison Dr., Augusta 04330 (3)  
 of, Irving I., Thayer Hospital, Waterville 04901 (6)  
 rich, Blynn O., 45 Roosevelt Ave., Waterville 04901 (6)  
 twin, Ralph A., Sr., 56 Denison St., Auburn 04210 (1)  
 twin, Ralph A., Jr., 33 Court St., Auburn 04210 (1)  
 yeb, Eugene, 82 Maine Ave., Rumford 04276 (9)  
 nley, Eugene G., Market Square, Houlton 04730 (2)  
 ld, George I., 79 Main St., Richmond 04357 (6)  
 ger, Robert C., Blue Hill 04614 (5)  
 es, Robert A., Sunset Drive, Orono 04473 (10)  
 , Philip L., Blue Hill 04614 (5)  
 o, Edward A., 12 Pine St., Portland 04102 (3)  
 o, Edward A., Jr., 12 Pine St., Portland 04102 (3)  
 n, Ross W., 33 Court St., Auburn 04210 (1)  
 ne, John P., 19 Sabattus St., Lewiston 04240 (1)  
 ne, Merrill S. F., 466 Main St., Lewiston 04240 (1)  
 ory, Frederick J., So. Main St., Caribou 04736 (2)  
 ory, Philip O., St. Andrews Hosp., Boothbay Harbor 04538 (8)  
 in, Carl R., Jr., 61 Atlantic Ave., Boothbay Harbor 04538 (8)  
 iths, Eugene B., 350 Main St., Presque Isle 04769 (2)  
 ies, Gilbert R., 185 Webster St., Lewiston 04240 (1)  
 emette, Maurice R., 107 Water St., Augusta 04330 (6)  
 e, L. Armand, Sr., 45 Elm St., Waterville 04901 (6)  
 e, L. Armand, Jr., 45 Elm St., Waterville 04901 (6)

, Carl M., Box 546, Biddeford 04005 (15)  
 , Rudolph, 480 Main St., Lewiston 04240 (1)  
 Lillian M., 91 Sabattus St., Lewiston 04240 (1)  
 Walter L. H., 130 Middle St., Old Town 04468 (10)  
 William J., III, 321 Brackett St., Portland 04102 (3)  
 adjian, Hagop, Rumford Com. Hosp., Rumford 04276 (9)  
 ett, George W., 22 Bramhall St., Portland 04102 (3)  
 erin, David C., 89 Hospital St., Augusta 04330 (6)  
 lin, Irvin E., Main St., East Millinocket 04430 (10)  
 lin, Paul S., 122 Academy St., Presque Isle 04769 (2)  
 bury, Euclid M., Jr., Medical Bldg., Belfast 04915 (13)  
 lanos, Vassilios, 191 Lincoln Ave., Rumford 04276 (9)  
 ey, Daniel F., Box 250, Brunswick 04011 (3)  
 igan, Charles A., 85 Goff St., Auburn 04210 (1)  
 igan, Margaret H., 85 Goff St., Auburn 04210 (1)  
 Badi Z., Webber Hosp., Biddeford 04005 (15)  
 ly, Edmund W., 134 U.S. Rt. 1, Falmouth 04105 (3)  
 ly, Henri R., Dark Harbor, Islesboro 04848 (7)  
 ins, Michael J., 437 Main St., Lewiston 04240 (1)  
 er, Harry L., 17 Main St., South Paris 04281 (9)  
 ison, George J., Market Square, Houlton 04730 (2)  
 ey, William C., Wilford Hall Hosp., Lackland AFB, Tex. 78236 (2)  
 kes, Richard S., 233 Vaughan St., Portland 04102 (3)  
 kins, Donald B., Atlantic Ave. and Sea St., Camden 04843 (7)  
 es, James C., 6 E. Chestnut St., Augusta 04330 (6)  
 ward, I. Mead, So. Main St., Caribou 04736 (2)  
 elton, Warren C., 2 E. Main St., So. Paris 04281 (9)  
 ard, Lawrence R., Cider Hill Rd., York 03909 (15)  
 l, Rufus W., Radiology Dept., Univ. of Wisconsin Hosp., Madison, Wis. 53706 (5)  
 in, Carl J., 20 South Rd., Brewer 04412 (10)  
 etz, Ralph, 173 State St., Portland 04101 (3)  
 ick, Harry M., Jr., 122 Academy St., Presque Isle 04769 (2)  
 ick, Stanley E., Jr., Central Maine Gen. Hosp., Lewiston 04240 (1)  
 ing, Leon D., Memorial Dr., Winthrop 04364 (6)  
 son, John R., Southwest Harbor Med. Ctr., Southwest Harbor 04679 (5)  
 el, Joseph J., 34 Gilman St., Waterville 04901 (6)  
 ert, Clement A., 321 Brackett St., Portland 04102 (3)  
 ert, Joelle C., Jr., Box 148, Norway 04268 (9)  
 ins, George F., 122 Academy St., Presque Isle 04769 (2)  
 Allison K., 431 State St., Bangor 04401 (10)  
 Anthony B., 283 Water St., Augusta 04330 (6)  
 Douglas R., 855 Sawyer St., South Portland 04106 (3)  
 Howard F., 325A Kennedy Dr., Waterville 04901 (6)

Hill, Kevin, 325A Kennedy Dr., Waterville 04901 (6)  
 Hill, Paul S., Jr., 323 Main St., Saco 04072 (15)  
 Hinckley, Harris, 331 Cottage Rd., South Portland 04106 (3)  
 Hirschberger, Celia, Augusta State Hosp., Augusta 04330 (6)  
 Hoch, Gretl J., Phillips 04966 (12)  
 Hoffman, Alvin A., Box 38, York 03909 (15)  
 Hogan, Chester F., 62 Main St., Houlton 04730 (2)  
 Holt, Alfred T., Bath Mem. Hosp., Bath 04530 (8)  
 Holt, C. Lawrence, 41 Fox Ave., St. John's, Newfoundland, Can. (3)  
 Holz, Peter H., 51 Elm St., Camden 04843 (7)  
 Holzwarth, Hans A., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Hopkins, Herbert J., 24 Portland Ave., Old Orchard Beach 04064 (15)  
 Hornberger, H. Richard 325 Kennedy Dr., Waterville 04901 (6)  
 Hornstein, Louis S., 220 Water St., Skowhegan 04976 (12)  
 Houle, Marcel P., 200 Alfred St., Biddeford 04005 (15)  
 Houlihan, John S., 209 State St., Bangor 04401 (10)  
 Howard, Emery B., Jr., 23A Summer St., Rockland 04841 (9)  
 Howard, George C., Oak St., Guilford 04443 (11)  
 Howard, Henry M., 105 Franklin St., Rumford 04276 (9)  
 Howe, Chester W., Blue Hill 04614 (5)  
 Hsu, Theodore S., 14 High St., Ellsworth 04605 (5)  
 Hubbard, Roswell E., Waterford 04088 (9)  
 Hudson, Henry A., Southport Island 04569 (8)  
 Hughes, Edward J., Jr., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Hunter, Albert L., 45 Golder St., Lewiston 04240 (1)  
 Huntress, Roderick L., Box 419, North Windham 04062 (3)  
 Hurd, Allan C., 5 Hasson St., Hallowell 04347 (6)  
 Hutchins, Deane L., 10 Frost Lane, Orono 04473 (10)

Ines Campomanes, Carolina R., 144 State St., Portland 04101 (3)  
 Irwin, Carl W., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Isil, Neal H., 50 Union St., Ellsworth 04605 (5)  
 Iszard, David M., 70 Peace Corps, 806 Conn. Ave., Washington, D.C. 20

Jackson, Norman M., 9 Franklin St., Rumford 04276 (9)  
 Jacob, Donald R., Princeton 04668 (14)  
 Jacobson, Payson B., 295 Brighton Ave., Portland 04102 (3)  
 James, Chakmakis, 47 Howe St., Lewiston 04240 (1)  
 James, John A., 117 Goff St., Auburn 04210 (1)  
 Jellerson, Leon R., U.S.C.G. Training Ctr., May, N.J. 08204 (15)  
 Jillson, Otis F., 478 State St., Bangor 04401 (10)  
 Johnson, Albert C., 131 Chadwick St., Portland 04102 (3)  
 Johnson, Gordon N., Box 86, Houlton 04730 (2)  
 Johnson, Oscar R., 9 Parsons Rd., Portland 04103 (3)  
 Johnson, R. Paul, Main St., Fort Kent 04743 (2)  
 Johnston, James S., 258 Main St., Saco 04072 (15)  
 Jones, Gareth O.M., Augusta Gen. Hosp., Augusta 04330 (6)  
 Jones, Paul A., Jr., 2 School St., Waterville 04901 (6)  
 Jones, Paul A., Sr., General Delivery, Union 04862 (7)  
 Joost, Arthur M., Jr., Box 520, Bucksport 04416 (5)  
 Jordan, W. Edward, Jr., Fairview Hosp., Skowhegan 04976 (12)  
 Jorel, Louis E., 240 State St., Presque Isle 04769 (2)

Kadi, Francis J., Bangor State Hosp., Bangor 04401 (10)  
 Kanda, Yasuo, St. Mary's Gen. Hosp., Lewiston 04240 (1)  
 Kangas, Onni C., 11 Maple St., Rockland 04841 (7)  
 Kaplan, Abraham, 85 Goff St., Auburn 04210 (1)  
 Kawamura, Takeo, 336 Mt. Hope Ave., Bangor 04401 (10)  
 Kazutow, John, Box 113, Columbia Falls 04623 (14)  
 Keating, Anthony J., 10 Oak Grove Ave., Bath 04530 (8)  
 Kellogg, Robert O., 431 State St., Bangor 04401 (10)  
 Kemezys, Kestutis M., 25 Garfield St., Madison 04950 (12)  
 Kent, Stanley W., 42 Deering St., Portland 04101 (3)  
 Kershner, Warren E., 57 Green St., Bath 04530 (8)  
 Kibbe, Frank W., R.F.D., Lincolnville 04849 (7)  
 Kiel, Joseph B., Columbia Falls 04623 (14)  
 Killoran, Paul J., Knox County Gen. Hosp., Rockland 04841 (7)  
 Kimball, Philip R., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Kimura, Takanori, Box C, Pownal 04069 (3)  
 Kinder, Edward L., Jr., 1027 Washington St., Bath 04530 (8)  
 King, Merrill J., Jr., Vinal Rd., West Rockport 04865 (7)  
 Kinghorn, Charles W., 4 Wentworth St., Kittery 03904 (15)  
 Kirk, William V., Eagle Lake 04739 (2)  
 Klopp, Donald W., Rt. 4, Gardiner 04345 (6)  
 Knickerbocker, Charles H., 15 High St., Bar Harbor 04609 (5)  
 Knoppers, Jan, 54 Pine St., Lewiston 04240 (1)  
 Knowles, John E., 131 Chadwick St., Portland 04102 (3)  
 Knowles, Robert M., 49 Deering St., Portland 04101 (3)  
 Knuuti, Harold E., Medical Bldg., Belfast 04915 (13)  
 Kopfinann, Harry, Deer Isle 04627 (5)  
 Kostrubala, Thaddeus, 22 Bramhall St., Portland 04102 (3)  
 Kothari, Nauttam J., 120 East 36th St., New York, N. Y. 10016 (15)  
 Kraunz, Robert F., 300 Main St., Lewiston 04240 (1)  
 Kunkle, E. Charles, 131 Chadwick St., Portland 04102 (3)



abbe, Onil B., Van Buren 04785 (2)  
 aCasce, Joseph H., 50 Union St., Ellsworth 04605 (5)  
 aFlamme, Paul J., 106 Russell St., Lewiston 04240 (1)  
 aFond, Robert S., 258 Main St., Saco 04072 (15)  
 al, Chandra P., Munroe Wing, Regina Gen. Hosp., Regina, Saskatchewan, Can. (6)  
 altoo, Joseph M., 6 Long Sands Rd., York 03909 (15)  
 ambdin, Morris A., Maine Coast Mem. Hosp., Ellsworth 04605 (5)  
 ane, Russell M., 129 Main St., Orono 04473 (10)  
 aney, Richard P., 50 Water St., Skowhegan 04976 (12)  
 anger, Ella, 192 Capitol St., Augusta 04330 (6)  
 ape, C. Philip, 7 Bramhall St., Portland 04102 (3)  
 apirow, Harry, 99 Main St., Kennebunk 04043 (15)  
 appin, John J., 171 State St., Portland 04101 (3)  
 arrabee, Charles F., 1951 N. Meridian Rd., Tallahassee, Fla. 32306 (5)  
 arson, Karl V., East Machias 04630 (14)  
 athbury, Vincent T., Medical Arts Building, Rockland 04841 (7)  
 aughlin, K. Alexander, 201 State St., Portland 04101 (3)  
 ayton, M. Lewis, 1 Seaview Ter, Belfast 04915 (13)  
 awry, Oram R., Jr., 96 Limerock St., Rockland 04841 (7)  
 eadley, Peter J., R.F.D., Wayne 04284 (6)  
 echer, Robert C., Medical Bldg., Belfast 04915 (13)  
 eck, Richard C., Bath Mem. Hosp., Bath 04530 (8)  
 eckie, Michael I., 94 Auburn St., Portland 04103 (3)  
 eigh, Kenneth E., Brixham Rd., York 03909 (15)  
 eighton, Wilbur F., 192 State St., Portland 04101 (3)  
 eiter, Laban W., 175 Vaughan St., Portland 04102 (3)  
 eitman, Reuben, 188 Sabattus St., Lewiston 04240 (1)  
 eonard, Lawrence M., 7 Bramhall St., Portland 04102 (3)  
 eonardi, Joseph A., Central Maine Gen. Hosp., Lewiston 04240 (1)  
 epore, Anthony E., 128 Maine Ave., Gardiner 04345 (6)  
 eschey, William H., Jr., 7 Bramhall St., Portland 04102 (3)  
 evy, Richard A., 128 Chadwick St., Portland 04102 (3)  
 ibby, Harold E., 702 Main St., Westbrook 04092 (3)  
 ibby, John T., 723 Congress St., Portland 04102 (3)  
 ichter, Horacio A., 54 Pine St., Lewiston 04240 (1)  
 idstone, Frederick B., 117 Goff St., Auburn 04210 (1)  
 ightbody, Charles H., No. Main St., Guilford 04443 (11)  
 ighthart, Pim W. K., 147 Washington St., Auburn 04210 (1)  
 incoln, John R., 22 Bramhall St., Portland 04102 (3)  
 incourt, Armand S., 122 Main St., Sanford 04073 (15)  
 lorente, Aldo F., 56 Baribeau Dr., Brunswick 04011 (3)  
 oewenstein, George, 1007 Woodside Dr., Clearwater, Fla. 33516 (7)  
 ombard, Reginald T., 793 Main St., South Portland 04106 (3)  
 ord, George A., 27 June St., Sanford 04073 (15)  
 ord, George P., 7 Bramhall St., Portland 04102 (3)  
 ord, Maurice E., Box 537, Lake Placid, Florida 33852 (12)  
 orentz, John J., Maine Medical Ctr., Portland 04102 (3)  
 orimer, Robert V., 169 State St., Portland 04101 (3)  
 oring, William E., 144 State St., Portland 04101 (3)  
 ovely, David K., 46 Deering St., Portland 04101 (3)  
 utes, Chris A., 7 Bramhall St., Portland 04102 (3)  
 ynn, Geraldine, 188 Russell St., Lewiston 04240 (1)

lacBride, Robert G., 25 Washington St., Lubec 04652 (14)  
 lacDonald, G. Vernon A., Box 228, Ashland 04732 (2)  
 lacDonald, Lewis V. A., (Address Unknown) (2)  
 lacDougall, James A., 303 Penobscot St., Rumford 04276 (9)  
 lack, Francis X., 144 State St., Portland 04101 (3)  
 lacKinnon, Bernard L., 22 Bramhall St., Portland 04102 (3)  
 lacVane, William L., Jr., 211 State St., Portland 04101 (3)  
 adaras, John, Bangor State Hosp., Bangor 04401 (10)  
 adigan, John B., Houlton 04730 (2)  
 agaudda, Michael M. P., 39 Old Orchard St., Old Orchard Beach 04064 (15)  
 agocsi, Alexander W., York 03909 (15)  
 aier, Paul, 723 Congress St., Portland 04102 (3)  
 akin, John B., Jr., 82 Maine Ave., Rumford 04276 (9)  
 althy, George L., 31 Bramhall St., Portland 04102 (3)  
 anter, Wilbur B., 1 Fern St., Bangor 04401 (10)  
 arc, Joseph A., 340 E. 34th St., New York, N. Y. 10016 (8)  
 arcotte, Andre P., 342 Main St., Lewiston 04240 (1)  
 arquardt, Matthias, 109 Cony St., Augusta 04330 (6)  
 arshall, Donald F., 25 Bramhall St., Portland 04102 (3)  
 arshall, Joseph A., 177 Main St., Waterville 04901 (6)  
 arshall, Paul A., R.F.D. No. 1, Box 121A, Ridge Rd., Fairfield 04937 (6)  
 arshall, Richard A., Central Maine Gen. Hosp., Lewiston 04240 (1)  
 arston, Paul C., Kezar Falls 04047 (3)  
 artel, Cyprien L., Jr., 91 Bartlett St., Lewiston 04240 (1)  
 artin, Joseph E., 35 Main St., Mexico 04257 (9)  
 artin, Ralf, 131 Chadwick St., Portland 04102 (3)  
 artin, Thomas A., 157 Pine St., Portland 04102 (3)  
 ason, Sabry E., Main St., Calais 04619 (14)  
 ason, Peter H., Millinocket Com. Hosp., Millinocket 04462 (10)  
 athews, Hugh J., Jr., 345 Water St., Gardiner 04345 (6)  
 atthews, Edward C., 131 Chadwick St., Portland 04102 (3)  
 azerolle, Denis R., 228 Sweden St., Caribou 04736 (2)  
 azzone, Giovanni, 499 Stevens Ave., Portland 04103 (3)

McAfee, Robert E., 7 Bramhall St., Portland 04102 (3)  
 McAllister, John W., Box 38, Lubec 04652 (14)  
 McCann, Eugene C., 49 Deering St., Portland 04101 (3)  
 McCrum, Philip H., 188 State St., Portland 04101 (3)  
 McEvoy, Charles D., Jr., 186 State St., Bangor 04401 (10)  
 McFarland, Edward A., Baribeau Dr., Brunswick 04011 (3)  
 McGinn, John F., 205 French St., Bangor 04401 (10)  
 McGuire, Stuart W., 131 State St., Portland 04101 (3)  
 McIntire, Barron F., Jr., 13 W. Elm St., Yarmouth 04096 (3)  
 McIntire, Percy C., Central Maine San., Fairfield 04937 (12)  
 McIntyre, John D., 50 Union St., Ellsworth 04605 (5)  
 McKendry, James R., 12 Spruce St., Augusta 04330 (6)  
 McLaren, John J., 31 Western Ave., Augusta 04330 (6)  
 McLaughlin, Clarence R., 345 Water St., Gardiner 04345 (6)  
 McLaughlin, Ivan E., Rt. 5A, Gardiner 04345 (6)  
 McLean, E. Allan, 29 Deering St., Portland 04101 (3)  
 McLean, Preston A., 336 Mt. Hope Ave., Bangor 04401 (10)  
 McLellan, William A., Harbor Rd., Camden 04843 (7)  
 McManamy, Eugene P., 72 West St., Portland 04102 (3)  
 McMichael, Morton, 73 Deering St., Portland 04101 (3)  
 McQuillan, Arthur H., 177 Main St., Waterville 04901 (6)  
 McQuoid, Robert M., 39 Columbia St., Bangor 04401 (10)  
 Melendy, Oakley A., Doctors Park, 89 Hosp. St., Augusta 04330 (6)  
 Melkis, Andrew, Box 161, Gray 04039 (3)  
 Melnick, Jacob, 261 Congress St., Portland 04101 (3)  
 Meltzer, Jack N., 128 Broadway, Bangor 04401 (10)  
 Mommelaar, Joseph E., 431 State St., Bangor 04401 (10)  
 Mendes, Joseph M., 5 School St., Lisbon Falls 04252 (1)  
 Mendros, John G., 111 Webster St., Lewiston 04240 (1)  
 Merriam, Thornton W., Jr., 431 State St., Bangor 04401 (10)  
 Metz, Gerald A., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Michaud, Joseph C., 160 Silver St., Waterville 04901 (6)  
 Milazzo, John, 42 Elm St., Auburn 04210 (1)  
 Miller, Buell A., 7 Bramhall St., Portland 04102 (3)  
 Miller, Clark F., Greene 04236 (1)  
 Miller, Thor, 752 Main St., Westbrook 04092 (3)  
 Milliken, Howard H., R. No. 1, Pond Rd., (Manchester), Hallowell 04  
 Millington, Paul A., 44 Mountain St., Camden 04843 (7)  
 Milsovic, Robert C., 22 Bramhall St., Portland 04102 (3)  
 Miniutti, Gloria M., 32 Deering St., Portland 04101 (3)  
 Minton, Paul R., 131 Chadwick St., Portland 04102 (3)  
 Miragliuolo, Leonard G., 10 Maple St., Bangor 04401 (10)  
 Miskimins, Joseph H., 325B Kennedy Dr., Waterville 04901 (6)  
 Mitchell, Hazen C., Calais 04619 (14)  
 Mohlar, Robert G., Doctors Park, 89 Hospital St., Augusta 04330 (6)  
 Monaghan, Stephen E., 7 Bramhall St., Portland 04102 (3)  
 Monkhouse, William A., 131 State St., Portland 04101 (3)  
 Monsivais, Alfredo, 1 Western Ave., Winthrop 04364 (6)  
 Moore, Beryl M., High St., Oxford 04270 (9)  
 Moore, Conner M., 372 Main St., Saco 04072 (15)  
 Moore, Valentine J., Thayer Hospital, Waterville 04901 (6)  
 Morin, Gerard L., 185 Webster St., Lewiston 04240 (1)  
 Morissette, Russell A., 185 Webster St., Lewiston 04240 (1)  
 Morris, Craig W., R.F.D. No. 1, Church Hill Rd., Augusta 04330 (6)  
 Morrison, Alvin A., 165 Glenwood Ave., Portland 04103 (3)  
 Morrison, Robert M., 148 State St., Portland 04101 (3)  
 Morse, Edward K., 22 White St., Rockland 04841 (7)  
 Moulton, Albert W., Sr., 180 State St., Portland 04101 (3)  
 Moulton, Albert W., Jr., 180 State St., Portland 04101 (3)  
 Moulton, Gardner N., 5 Grove St., Bangor 04401 (10)  
 Moulton, Marion K., West Newfield 04095 (15)  
 Moulton, Sumner E., 19 Deering St., Portland 04101 (3)  
 Munce, Richard T., 336 Mt. Hope Ave., Bangor 04401 (10)  
 Mundie, Perley J., 32 North St., Calais 04619 (14)  
 Murphy, John J., 84 Portland St., South Berwick 03908 (15)  
 Murray, John G., Jr., Blue Hill Mem. Hosp., Blue Hill 04614 (5)

Nackley, George N., 1 School St., Machias 04654 (14)  
 Nadeau, J. Paul, 91 Pine St., Lewiston 04240 (1)  
 Nadeau, Lawrence A., 41 Sherbrooke Ave., Lewiston 04240 (1)  
 Nangle, Thomas P., West Paris 04289 (9)  
 Naumer, Harry A., Land's End, Port Clyde 04855 (7)  
 Nelson, Chesley W., Southport 04569 (9)  
 Nelson, Isaac, Box 506, Greenville 04441 (11)  
 Nesin, Bourcard, 21 Penobscot Ave., Howland 04448 (10)  
 Netland, Anders T., 431 State St., Bangor 04401 (10)  
 Nicholas, Eric F., Mars Hill 04758 (2)  
 Nickerson, Norman H., Greenville 04441 (11)  
 Nielsen, Odd S., 120 Hudson Rd., Bangor 04401 (11)  
 Nieuwerkerk, Willem F., Box 424, Kennebunkport 04046 (15)  
 Nikolaidis, Demitrios, 22 Ridgewood Dr., Augusta 04330 (6)  
 Nolin, Laurier E., 14 Gilman St., Waterville 04901 (6)  
 Nuesse, William E., 22 White St., Rockland 04841 (7)

O'Brien, William A., Arthur R. Gould Mem. Hosp., Presque Isle 0476  
 Oceretko, Arkadij, Gov. King Oak Grove Ave., Bath 04530 (8)



Connor, Francis J., 4 Woodlawn St., Augusta 04330 (6)  
 Donnell, Eugene E., Mercy Hospital, Portland 04101 (3)  
 Strich, Alfred, 25 Hartford St., Rumford 04276 (9)  
 Iler, Robert L., Box 42, Veterans Adm., Togus 04330 (6)  
 Kane, Francis R., 200 Spruce St., Millinocket 04462 (10)  
 Msted, Burton L., 73 Deering St., Portland 04101 (3)  
 iat, Mustafa V., St. George 04857 (7)  
 per, Lincoln, Knox Co. Gen. Hosp., Rockland 04841 (7)  
 beton, Everett A., 131 Chadwick St., Portland 04102 (3)  
 her, Harold L., 131 Chadwick St., Portland 04102 (3)  
 ler, Jay K., 74 Birch St., Bangor 04401 (10)  
 Sullivan, James V. I., 376 Main St., Lewiston 04240 (1)  
 Sullivan, William B., Box 645, Biddeford 04005 (15)  
 tum, Alvin E., 148 State St., Portland 04101 (3)  
 ellette, Benoit, 1 James St., Fort Kent 04743 (2)

ge, Rosario A., 22 Sweden St., Caribou 04736 (2)  
 mer, Edward J., Maine Maritime Acad., Castine 04421 (5)  
 mer, Mahlon P., Nasson College, Springvale 04083 (15)  
 mer, Thomas H., Jr., 431 State St., Bangor 04401 (10)  
 ndya, Najib M., 7 Novella St., Lewiston 04240 (1)  
 trot, Hadley, 431 State St., Bangor 04401 (10)  
 sternak, Irwin M., 336 Mt. Hope Ave., Bangor 04401 (10)  
 tane, Joseph M., 256 Alfred St., Biddeford 04005 (15)  
 tten, Ray S., 336 Mt. Hope Ave., Bangor 04401 (10)  
 terson, James, Apt. 10D, 45 Eastern Prom., Portland 04101 (3)  
 terson, John C., Augusta State Hosp., Augusta 04330 (6)  
 wle, Robert H., 251 U. S. Rt. 1, Falmouth 04105 (3)  
 rson, John J., 100 So. Main St., Old Town 04468 (10)  
 ise, Horace B., Maine Coast Mem. Hosp., Ellsworth 04605 (5)  
 iddie, Harry M. K., Doctors Park, 89 Hosp. St., Augusta 04330 (6)  
 ddleton, Arthur D., 3 Green St., Fort Fairfield 04742 (2)  
 noyer, Douglass C., 112 Vaughan St., Portland 04102 (3)  
 nta, Walter E., 316 Woodford St., Portland 04103 (3)  
 kins, Niles L., R.F.D. No. 1, Bowdoinham 04008 (3)  
 rault, Oscar W., 30 South St., Biddeford 04005 (15)  
 erlein, Walter R., Jr., 75 Main St., Springvale 04083 (15)  
 erson, Herman C., Chebeague Island 04017 (3)  
 iffer, Paul H., 14 Gilman St., Waterville 04901 (6)  
 ilbrick, Maurice S.,  
 3349 N. W. 32nd Crt., Fort Lauderdale, Fla. 33309 (12)  
 illips, David L., 99 Abby Lane, Portland 04103 (9)  
 illips, Lewis E., 336 Mt. Hope Ave., Bangor 04401 (10)  
 ies, Philip, Maine St., Limestone 04750 (2)  
 tt, Anna, Beauchamp Rd., Rockport 04856 (7)  
 mpton, Jay R., 283 Water St., Augusta 04330 (6)  
 gue, Jackson S., 529 Gilmore Ave., Trafford, Pa. 15085 (3)  
 liner, Irving J., 95 West St., Portland 04102 (3)  
 lisner, Saul R., 143 Vaughan St., Portland 04102 (3)  
 merleau, Ovid F., 179 Main St., Waterville 04901 (6)  
 merleau, Rodolphe J. F., Cascade Pk., Rt. 1, Waterville 04901 (6)  
 pe, W. Dean, 6 Pleasant St., Rangeley 04970 (4)  
 rter, Edward C., 489 State St., Bangor 04401 (10)  
 rter Joseph E., 22 Bramhall St., Portland 04102 (3)  
 tts, Ronald S., Central Maine Gen. Hosp., Lewiston 04240 (1)  
 alin, Albert A., Cherry Hill Dr., Waterville 04901 (6)  
 alin, James E., 177 Main St., Waterville 04901 (6)  
 well, Ralph C., Damariscotta 04543 (8)  
 tt, Loring W., 325 Kennedy Dr., Waterville 04901 (6)  
 ce, Richard D., R.F.D. 2, Caribou 04736 (2)  
 tham, Fred J., Greenville Junction 04442 (11)  
 ctor, Ray A., Garden Circle, Caribou 04736 (2)  
 ctor, Thomas E., Boothbay Harbor 04538 (8)  
 udian, Paul O., 776 Main St., Westbrook 04092 (3)  
 ulx, Harvey J., 185 Webster St., Lewiston 04240 (1)  
 vost, Helen C., 48 Green St., Augusta 04330 (6)  
 inton, William A., St. Joseph Hosp., Bangor 04401 (10)

ia, Theodore J., Jr., Waldo County Gen. Hosp., Belfast 04915 (13)  
 nd, Carleton H., 219 Oak St., Lewiston 04240 (1)  
 ndo, Joseph J., 111 Webster St., Lewiston 04240 (1)  
 y, Ferris S., 7 Bramhall St., Portland 04102 (3)  
 ed, Howard L., 235 Madison Ave., Skowhegan 04976 (12)  
 ed, James W., 18 Main St., Farmington 04938 (4)  
 el, John J., 59 So. Front St., Richmond 04357 (6)  
 eves, Edward L., 179 Sabattus St., Lewiston 04240 (1)  
 eves, Helene M., 179 Sabattus St., Lewiston 04240 (1)  
 rrick, Edwin G., Box C, Pownal 04069 (3)  
 ynolds, Arthur P., 29 Second St., Presque Isle 04769 (2)  
 ynolds, John F., 325 Kennedy Dr., Waterville 04901 (6)  
 ynolds, Ralph L., 216 Main St., Waterville 04901 (6)  
 hards, A. Dewey, 11 Gage St., Bridgton 04009 (3)  
 hards, Carl E., 27 June St., Sanford 04073 (15)  
 hards, Henry H., Jackman 04945 (12)  
 hards, Lee W., Jr., 89 Hospital St., Augusta 04330 (6)  
 leout, Samuel, Green St., Fort Fairfield 04742 (2)

Ridlon, Joseph R., 58 South St., Gorham 04038 (3)  
 Robert, Roger J. P., 258 Main St., Saco 04072 (15)  
 Robertson, Donald M., Box 188, Milbridge 04658 (14)  
 Robertson, George J., 1370 Turnpike St., North Andover, Mass. 01845 (6)  
 Robinson, Hugh P., 7 Bramhall St., Portland 04102 (3)  
 Rock, Daniel A., 477 Main St., Lewiston 04240 (1)  
 Rodriguez, Araminta M., 4604 No. St. Vincent St., Tampa, Fla. 33614 (11)  
 Rodriguez, Jose M., 325 Kennedy Dr., Waterville 04901 (6)  
 Rogers, Albert M., 157 Pine St., Portland 04102 (3)  
 Rohm, Walter, Augusta State Hosp., Augusta 04330 (6)  
 Root, John A., 22 White St., Rockland 04841 (7)  
 Rosenblatt, Stanley D., 480 Main St., Lewiston 04240 (1)  
 Ross, Maurice, 372 Main St., Saco 04072 (15)  
 Roussin, William T., 48 Bacon St., Biddeford 04005 (15)  
 Rowe, Gunther H., 12 Church St., Chisholm 04222 (4)  
 Rowe, Linwood M., Rumford Com. Hosp., Rumford 04276 (9)  
 Royal, Albert P., Jr., 82 Maine Ave., Rumford 04276 (9)  
 Rubins, Nina B., E. A. Center Mem. Clinic, Steep Falls 04085 (3)  
 Rubins, Talivaldis, E. A. Center Mem. Clinic, Steep Falls 04085 (3)  
 Russell, Daniel F. D., Leeds 04263 (1)  
 Russell, Robert F., Penobscot 04476 (5)  
 Russell, Theodore M., Doctors Park, 89 Hospital St., Augusta 04330 (6)  
 Ryan, Patrick J.M., 345 Water St., Gardiner 04345 (6)

Sager, George F., 7 Bramhall St., Portland 04102 (3)  
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 Sandvoss, Herman G., Union St., Kennebunkport 04046 (15)  
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 Santoro, Domenico A., 43 Deering St., Portland 04101 (3)  
 Sapiro, Howard M., Chateau Westgate, 113 Oaklane, Brockton, Mass. 02401 (3)  
 Satir, Ahmet, Box 682, Augusta 04330 (6)  
 Saunders, Allen I., Ferry Rd., R.F.D. 2, Augusta 04330 (6)  
 Saunders, Norman W., 233 Vaughan St., Portland 04102 (3)  
 Saunders, Sallie H., R.F.D., Camden 04843 (7)  
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 Schumacher, William E., 14 Westwood Rd., MD "B", Augusta 04330 (6)  
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 Sears, Harold G., Second Ave., Woodland 04694 (14)  
 Seligman, Morris, J., Veterans Adm., Togus 04330 (6)  
 Selmei, Tibor G., Hayden Ct., Woodstock, N. B., Can. (2)  
 Selvage, Irving L., Jr., 22 Bramhall St., Portland 04102 (3)  
 Senenky, Joseph P., Augusta State Hosp., Augusta 04330 (6)  
 Sensenig, David M., 431 State St., Bangor 04401 (10)  
 Serrage, John C., 38 Deering St., Portland 04101 (3)  
 Sewall, Elmer M., 14 Park St., Orono 04473 (10)  
 Sewall, Kenneth W., 2 School St., Waterville 04901 (6)  
 Shapiro, Benjamin L., 431 State St., Bangor 04401 (10)  
 Shapiro, Morrill, 7 Bramhall St., Portland 04102 (3)  
 Shaw, G. Patrick, 275 Main St., Biddeford 04005 (15)  
 Shaw, John H., 131 Sewall St., Augusta 04330 (6)  
 Sheehan, Terrance J., Doctors Park, 89 Hospital St., Augusta 04330 (6)  
 Shelton, M. Tieche, 21 Western Ave., Augusta 04330 (6)  
 Shems, Albert, 487 Main St., Lewiston 04240 (1)  
 Sherman, Fuller G., Spruce Pt., Boothbay Harbor 04538 (8)  
 Shields, Daniel R., 369 Main St., Lewiston 04240 (1)  
 Shields, Thomas F., 300 Pine St., Lewiston 04240 (1)  
 Shubert, Alice J., 125 Leighton St., Bangor 04401 (10)  
 Shubert, William M., 317 State St., Bangor 04401 (10)  
 Shurman, Hans, 10 Spring St., Dexter 04930 (10)  
 Sidwell-Thompson, Doris M.,  
 R.F.D. Whittier Rd., W. Ossipee, N. H. 03890 (3)  
 Sieling, Walter H., Jr., Upper Round Pond Rd., Bristol 04539 (8)  
 Sigafoss, J. Harvey, Pleasant Point 04563 (7)  
 Silver, Randall H., Maine Coast Mem. Hosp., Ellsworth 04605 (5)  
 Simpson, Margaret R., 2 Sea Barn Rd., Cape Elizabeth 04107 (6)  
 Sirodot, George, Box 111, Independence, Iowa 50644 (3)  
 Skillin, Charles E., 690 Congress St., Portland 04102 (3)  
 Sleeper, Francis H., 3 Colony Rd., Augusta 04330 (6)  
 Small, Foster C., 169 High St., Belfast 04915 (13)  
 Smith, Carroll H., Box 785, Presque Isle 04769 (2)  
 Smith, Charles M., 1740 Marco Polo Way, Burlingame, Calif. 94010 (9)  
 Smith, Christopher S., Box 232, Farmington 04938 (4)  
 Smith, Edgar J., 1 Park St., Fairfield 04937 (12)  
 Smith, Gerald R., Ogunquit 03907 (15)  
 Smith, Hugh A., Eastern Maine Med. Ctr., Bangor 04401 (10)  
 Smith, Jacob, 709 High St., Bath 04530 (8)  
 Smith, James O., 118 Front St., Bath 04530 (8)  
 Smith Joseph I., 118 Front St., Bath 04530 (8)  
 Smith, Kenneth E., Veterans Adm., Togus 04330 (6)  
 Smith, Margaret S., Box 967, Presque Isle 04769 (2)  
 Smith, Oney P., Post Rd., Wells 04090 (15)  
 Schnitke, Sidney M., Paradise Rd., Bethel 04217 (9)  
 Somerville, Robert B., 45 Hillside St., Presque Isle 04769 (2)



Somerville, Wallace B., Mars Hill 04758 (2)  
 Sommer, Robert G., 47 Deering St., Portland 04101 (3)  
 Southworth, John D., Hartland 04943 (12)  
 Sowles, Horace K., 413 Blackstrap Rd., Falmouth 04105 (3)  
 Spear, William, 107 Main St., Lisbon Falls 04252 (1)  
 Spellman, Francis A., Veterans Adm., Togus 04330 (6)  
 Stadler, Eliot T., West Gouldsboro 04687 (5)  
 Stanhope, Charles N., South St., Dover-Foxcroft 04426 (11)  
 Steele, Charles W., 472 Main St., Lewiston 04240 (1)  
 Steeves, John H., Rt. 3, Skowhegan 04976 (12)  
 Stein, Ernest W., 72 Main St., Pittsfield 04967 (12)  
 Stephenson, Richard B., Bldg. 1,  
 Rm. 118, National Institutes of Health, Bethesda, Md. 20014 (3)  
 Stetkevych, Alexander G., 12 Meyers Crt., Colonie, Albany, N. Y. 12200 (8)  
 Stevens, Carl H., 18 Franklin St., Belfast 04915 (13)  
 Stevens, Harold W., 369 Ferry Rd., Saco 04072 (15)  
 Stevens, Theodore M., 148 State St., Portland 04101 (3)  
 Stewart, Nancy H., Hancock St., Bar Harbor 04609 (5)  
 Stewart, Winston G., Hancock St., Bar Harbor 04609 (5)  
 Stimson, Barbara B., Star Route 22-282, Owl's Head 04854 (7)  
 Stinchfield, Allan J., Box 343, Augusta 04330 (6)  
 Stitham, Linus J., 50 Main St., Dover-Foxcroft 04426 (11)  
 Stocks, Joseph F., 22 Bramhall St., Portland 04102 (3)  
 Storer, Daniel P., 108 Fessenden St., Portland 04103 (3)  
 Stott, Nelson W., County Rd., Eastport 04631 (14)  
 Strach, Toffield B. J., 3 Deering St., Portland 04101 (3)  
 Striar, Ronald R., 94 Essex St., Bangor 04401 (10)  
 Strickland, Marian L., Easy St., Canaan 04924 (12)  
 Stroud, Geoffrey A., 65 Baribeau Dr., Brunswick 04011 (3)  
 Strout, Warren G., 83 Essex St., Bangor 04401 (10)  
 Stucki, Paul, 325 Kennedy Dr., Waterville 04901 (6)  
 Sturtevant, Vaughn R., 325 Kennedy Dr., Waterville 04901 (6)  
 Sullivan, George E., 86 Summer St., Waterville 04901 (12)  
 Suyama, Eji, 58 W. Main St., Ellsworth 04605 (5)  
 Swanson, Ronald A., Regional Mem. Hosp., Brunswick 04011 (3)  
 Sweatt, Linwood A., 48 Drummond St., Auburn 04210 (1)  
 Swengel, Richard M., 477 Main St., Lewiston 04240 (1)  
 Swett, Alfred E., 144 State St., Portland 04101 (3)  
 Swett, Carlton E., 21 Fairview Ave., Skowhegan 04976 (12)  
 Swett, Clyde L., 18 Sherman St., Island Falls 04747 (2)  
 Sy, Vincente L., Milford Ave., Bingham 04920 (12)  
 Sylvester, Stanley B., 400 Congress St., Portland 04111 (3)  
 Szelenyi, Ernest, Box C, Pownal 04069 (3)  
 Szendey, Andrew M., 26 Gray St., Madison 04950 (12)  
 Tabachnick, Henry M., 110 Park Ave., Portland 04101 (3)  
 Takach, Robert J., 325A Kennedy Dr., Waterville 04901 (6)  
 Tardif, Lionel R., 111 Webster St., Lewiston 04240 (1)  
 Tasiarchis, Louis N., 144 State St., Portland 04101 (3)  
 Taylor, H. Lewis, 25 Church St., Dexter 04930 (10)  
 Taylor, Paul E., 9 Wentworth St., Kittery 03904 (15)  
 Taylor, Richard W., 34 Buttonwood Lane, Lewiston 04240 (1)  
 Taylor, William F., 134 U.S. Route 1, Falmouth 04105 (3)  
 Thach, Jou S., 181 Russell St., Lewiston 04240 (1)  
 Thefeian, Alphonse, 321 Brackett St., Portland 04102 (3)  
 Temple, George L., Fahey St., Belfast 04915 (13)  
 Thetruer, William J., 144 Spring St., Portland 04101 (3)  
 Thacher, Henry C., 117 Goff St., Auburn 04210 (1)  
 Thaxter, Langdon T., Cumberland Foreside, Portland 04110 (3)  
 Thegen, W. Edward, Elm St., Bucksport 04416 (5)  
 Thomas, Philip B., 83 Essex St., Bangor 04401 (10)  
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 Thibbetts, Otis B., 181 Gamage Ave., Auburn 04210 (1)  
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 Torrey, Raymond L., R.F.D. No. 1, Belfast 04915 (13)  
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 Towne, Charles E., 18 Common St., Waterville 04901 (6)  
 Towne, John W., 325C Kennedy Mem. Dr., Waterville 04901 (6)  
 Tracy, Mary J., Bristol Rd., Damariscotta 04543 (8)  
 Trask, Henry M., 24 Hersey St., Portland 04103 (3)  
 Tremblay, Bruce, 325 Kennedy Dr., Waterville 04901 (6)  
 Troop, Donald E., 75 Main St., Springvale 04083 (15)  
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 Urcotte, Guy N., 7 Bramhall St., Portland 04102 (3)  
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 Umbell, Elliott D., Elm House, Naples 04055 (3)  
 Urner, Fennell P., Veterans Adm. Ctr., Togus 04330 (6)  
 Urner, Harland G., Box 38, Norridgewock 04957 (12)  
 Urville, Charles S., Box E, Alfred 04002 (15)  
 Wadelle, Frank W., 345 Water St., Gardiner 04345 (6)  
 Tyson, Dudley B., 91 Grove St., Bangor 04401 (10)  
 Uldall, Stella L., Augusta State Hosp., Augusta 04330 (6)  
 Urjanis, Janis, Pineland Hospital & Training Ctr., Pownal 04069 (3)  
 Vachon, Robert D., 34 Winter St., Sanford 04073 (15)  
 Van Deventer, Wilhelm H. J.,  
 R.F.D. 1, Mere Point Rd., Brunswick 04011 (3)  
 Van Lonkhuyzen, Maurice, 131 State St., Portland 04101 (3)  
 Van Pelt, John C., 50 Union St., Ellsworth 04605 (5)  
 Veilleux, Lucien F., 325 Kennedy Dr., Waterville 04901 (6)  
 Vibber, Foster L., West Jonesport 04649 (14)  
 Vickers, Martyn A., 268 State St., Bangor 04401 (10)  
 Viger, Leopold A., 10 Amherst St., Biddeford 04005 (15)  
 Viles, Wallace E., Turner 04282 (1)  
 Villandry, Philip J., 22 Bramhall St., Portland 04102 (3)  
 Vydas, Joseph, Bangor State Hosp., Bangor 04401 (10)  
 Wadsworth, Richard C., 489 State St., Bangor 04401 (10)  
 Walker, Douglass W., Maine Medical Ctr., Portland 04102 (3)  
 Wagner, Samuel L., 2 Holmes St., Winterport 04496 (10)  
 Wakefield, Robert D., St. Mary's Hosp., Lewiston 04240 (1)  
 Walsh, Andrew C., 144 State St., Portland 04101 (3)  
 Ward, John V., 8 Waites Landing Rd., Falmouth Foreside 04105 (3)  
 Ward, William W., Box 646, Rockland 04841 (7)  
 Ware, Roland G., Jr., 22 Bramhall St., Portland 04102 (3)  
 Wasgatt, Wesley N., 41 Talbot Ave., Rockland 04841 (7)  
 Watanabe, Tatsuo, 325 Kennedy Mem. Dr., Waterville 04901 (6)  
 Waterman, Dorothy, Waldoboro 04572 (7)  
 Waterman, Richard, Waldoboro 04572 (7)  
 Weaver, Michael L., 1011 Patrick St., Apt. 20, Flint, Mich. 48503 (3)  
 Webber, Isaac M., 29 Deering St., Portland 04101 (3)  
 Webber, John R., 6 Northport Ave., Belfast 04915 (13)  
 Webber, Merlon A., 33 Lacey St., Pittsfield 04967 (12)  
 Webber, Peter B., 233 Vaughan St., Portland 04102 (3)  
 Webber, Wedgwood P., 460 Main St., Lewiston 04240 (1)  
 Weekley, Melissa A., 190 Pine St., Portland 04102 (3)  
 Weisz, Hans, 17 Sunrise Ter., Orono 04473 (10)  
 Weymouth, Currier C., Eastmont Square, Farmington 04938 (4)  
 White, Chester W., Jr., 22 Bramhall St., Portland 04102 (3)  
 White, Henry O., 22 White St., Rockland 04841 (7)  
 White, Houghton M., 56 Baribeau Dr., Brunswick 04011 (3)  
 White, Leland M., 18 Pleasant St., Caribou 04736 (2)  
 White, Richard L., 7 Bramhall St., Portland 04102 (3)  
 White, William J., 1 Mitchell Rd., South Portland 04106 (3)  
 Whitney, Philip G., 233 Vaughan St., Portland 04102 (3)  
 Whitney, Ray L., Cape Porpoise 04014 (15)  
 Whittier, Alice A. S., 143 Neal St., Portland 04102 (3)  
 Whiting, William F., Box 462, York Harbor 03911 (15)  
 Wight, Donald G., 30 Mitchell Rd., South Portland 04106 (3)  
 Wilbur, Herbert T., Jr., 100 Main St., Southwest Harbor 04679 (5)  
 Wilder, William D., Box 2146, Augusta 04330 (6)  
 Williams, Edward P., 72 Main St., Houlton 04730 (2)  
 Williams, James A., 39 Pleasant St., Mechanic Falls 04256 (1)  
 Williams, Thomas W., 22 White St., Rockland 04841 (7)  
 Williamson, Elizabeth E., Blue Hill 04614 (5)  
 Williamson, Russell G., Blue Hill Mem. Hosp., Blue Hill 04614 (5)  
 Wilson, G. Ivan, 48 Court St., Houlton 04730 (2)  
 Wilson, Robert D., Mt. Desert Island Hosp., Bar Harbor 04609 (5)  
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 Winchenbach, Francis A., 910 Washington St., Bath 04530 (8)  
 Winkelbauer, Rudolf G., Baribeau Dr., Brunswick 04011 (3)  
 Wise, Joe R., Jr., 1 Fern St., Bangor 04401 (10)  
 Wood, George W., III, 156 North Main St., Brewer 04412 (10)  
 Woodcock, Allan, 35 Second St., Bangor 04401 (10)  
 Woodcock, John A., 35 Second St., Bangor 04401 (10)  
 Woodruff, Alan F., 16 Summer St., Rockland 04841 (7)  
 Woodman, Arthur B., 15 Johnson Rd., Falmouth Foreside 04105 (3)  
 Worthing, Verla E., Box A., Thomaston 04861 (7)  
 Wren, James C., Veterans Adm. Ctr., Togus 04330 (6)  
 Wyman, David S., 233 Vaughan St., Portland 04102 (3)  
 Wyman, Edwin T., 1110 Beacon St., Brookline, Mass. 02146 (11)  
 Yao, Jose, P., Main St., Van Buren 04785 (2)  
 Yeon, Hyung J.,  
 Station A, Harlem Valley State Hosp., Wingdale, N. Y. 12594 (1)  
 York, Elihu (CDR) MC, USN, Naval Aerospace Med. Inst., Pensacola, Fla. 32508 (1)  
 Young, E. Stanley, Poland Spring 04274 (1)  
 Young, John, Paradise Rd., Bethel 04217 (9)  
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## Health Care Systems Design Training Program

The National Center for Health Services Research and Development of the Department of Health, Education, and Welfare has recently awarded the Department of Industrial Engineering at the University of Missouri—Columbia a training grant to support a Ph.D. program in Health Care Systems Design. This grant provides additional resources to support the Department's extensive current commitment in this area. A vital feature of the program is the unique collaboration between the University School of Medicine and the College of Engineering. The program emphasizes industrial engineering analysis tools, as well as medical diagnosis and treatment practice, health care organization, and methods of health care systems evaluation. These areas of emphasis are applied in a series of design experiences. The program culminates in an original research dissertation.

A limited number of openings for admission and financial support are available to highly qualified persons with medical, paramedical, engineering, and science backgrounds, who have a professional commitment to research, design, or management of health care systems. Persons with a strong quantitative background who are interested in the program may write for more information to H. Allan Knappenberger, Ph.D.; Professor and Director of Graduate Studies; Department of Industrial Engineering; University of Missouri; Columbia, MO 65201.

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(from the Greek *kinetikos*,  
to move,  
and the Latin *sedatus*,  
to calm)

**KINESED®**

antispasmodic/sedative/antiflatulent



# anxiety: the tyrant

Excessive anxiety can often dominate the patient made vulnerable by illness, surgery, prolonged emotional stress. It can induce or aggravate symptoms, disrupt medical management, divert energy the patient needs for recovery. The antianxiety action of Librium® (chlórdiazepoxide HCl)—used adjunctively or alone—has demonstrated clinical usefulness in virtually every field of medical practice where anxiety complicates the patient's condition.



for the patient  
ruled by anxiety

## Librium® (chlórdiazepoxide HCl) 5-mg, 10-mg, 25-mg capsules

Before prescribing, please consult complete product information, a summary of which follows:

**Indications:** Indicated when anxiety, tension and apprehension are significant components of the clinical profile.

**Contraindications:** Patients with known hypersensitivity to the drug.

**Warnings:** Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering to addiction-

prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards. **Precautions:** In the elderly and debilitated, and in children over six, limit to smallest effective dosage (initially 10 mg or less per day) to preclude ataxia or oversedation, increasing gradually as needed and tolerated. Not recommended in children under six. Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (e.g., excitement, stimulation and acute rage) have been reported in psychiatric patients and hyperactive aggressive children. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective

measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically. **Adverse Reactions:** Drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido—all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally, making periodic blood counts and liver function tests advisable during protracted therapy.



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LABORATORIES

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Nutley, New Jersey 07110

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# Patients fell asleep quickly

Dalmane (flurazepam HCl) 30 mg reduced awake time—both before and after falling asleep - by fifty percent of pretreatment values in patients with insomnia.<sup>1,2</sup>

Two sleep laboratory studies recently confirmed findings of earlier studies of this type, namely, that Dalmane 30 mg was effective in patients who had trouble falling asleep, staying asleep or both. One 30-mg capsule of Dalmane usually induced sleep within 22 minutes, decreased the number of awakenings and the wake time after the onset of sleep, and provided 7 to 8 hours of sleep without need to repeat dosage during the night.

These studies utilized identical protocols and included eight insomniac patients. Sleep laboratory measurements in a limited number of patients are derived from all-night electroencephalographic, electro-oculographic and electromyographic tracings. Unlike traditional methods of evaluation, they are quantitative, reproducible and projectable to large numbers of subjects.

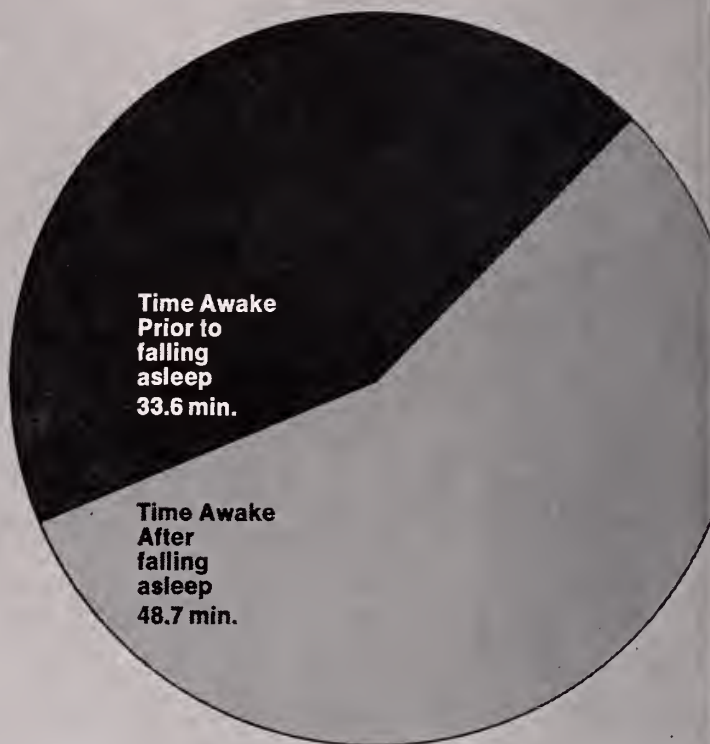
Results shown represent average values in all subjects for the three consecutive nights of placebo administration prior to Dalmane therapy and the seven consecutive nights on Dalmane 30 mg.

Dalmane is also relatively safe, as reported in clinical studies. Instances of morning "hang-over" have been relatively infrequent; paradoxical reactions (excitement) and hypotension have been rare. Dizziness, drowsiness, lightheadedness and the like were the side effects noted most frequently, particularly in the elderly or debilitated. (An initial dose of Dalmane 15 mg should be prescribed for these patients.)

**References:** 1. Frost, J. D., Jr.: "A System for Automatically Analyzing Sleep," Scientific Exhibit presented at Clinical Convention, A.M.A., Boston, Nov. 29-Dec. 2, 1970, and Aerospace M.A., Houston, April 26-29, 1971.

2. Data on file, Medical Department, Hoffmann-La Roche Inc., Nutley, N.J.

Before  
Dalmane  
(flurazepam HCl)



...in the presence of spasm or hypermotility, gas distension and discomfort, **KINESED<sup>®</sup>** provides more complete relief:

- ☐ belladonna alkaloids—for the hyperactive bowel
- ☐ simethicone—for accompanying distension and pain due to gas
- ☐ phenobarbital—for associated anxiety and tension

**Composition:** Each chewable, fruit-flavored, scored tablet contains: 16 mg. phenobarbital (warning: may be habit-forming); 0.1 mg. hyoscyamine sulfate; 0.02 mg. atropine sulfate; 0.007 mg. scopolamine hydrobromide; 40 mg. simethicone.

**Contraindications:** Hypersensitivity to barbiturates or belladonna alkaloids, glaucoma, advanced renal or hepatic disease.

**Precautions:** Administer with caution to patients with incipient glaucoma, bladder neck obstruction or uri-

nary bladder atony. Prolonged use of barbiturates may be habit-forming.

**Side effects:** Blurred vision, dry mouth, dysuria, and other atropine-like side effects may occur at high doses, but are only rarely noted at recommended dosages.

**Dosage:** Adults: One or two tablets three or four times daily. Dosage can be adjusted depending on diagnosis and severity of symptoms. Children 2 to 12 years: One half or one tablet three or four times daily. Tablets may be chewed or swallowed with liquids.



**STUART PHARMACEUTICALS** | Pasadena, California 91109 | Division of **ATLAS CHEMICAL INDUSTRIES, INC.**

(from the Greek *kinetikos*,  
to move,  
and the Latin *sedatus*,  
to calm)

**KINESED<sup>®</sup>**  
antispasmodic/sedative/antiflatulent

Spring peeper (tree frog, *Hyla crucifer*):  
this small amphibian can expand  
its throat membrane with air until it is  
twice the size of its head.





When disease is ruled out  
and psychic tension is implicated

**Valium<sup>®</sup> (diazepam)**  
**2-mg, 5-mg, 10-mg tablets**  
**helps relax the patient**  
**and relieve his somatic symptoms**

Before prescribing, please consult complete product information, a summary of which follows:

**Indications:** Tension and anxiety states; somatic complaints which are concomitants of emotional factors; psychoneurotic states manifested by tension, anxiety, apprehension, fatigue, depressive symptoms or agitation; symptomatic relief of acute agitation, tremor, delirium tremens and hallucinosis due to acute alcohol withdrawal; adjunctively in skeletal muscle spasm due to reflex spasm to local pathology, spasticity caused by upper motor neuron disorders, athetosis, stiff-man syndrome, convulsive disorders (not for sole therapy).

**Contraindicated:** Known hypersensitivity to the drug. Children under 6 months of age. Acute narrow angle glaucoma; may be used in patients with open angle glaucoma who are receiving appropriate therapy.

**Warnings:** Not of value in psychotic patients. Caution against hazardous occupations requiring complete mental alertness. When used adjunctively in convulsive disorders, possibility of increase in frequency and/or severity of grand mal seizures may require increased dosage of standard anticonvulsant medication; abrupt withdrawal may be associated with temporary increase in frequency and/or severity of seizures. Advise against simultaneous ingestion of alcohol and other CNS depressants. Withdrawal symptoms (similar to those with barbiturates and alcohol) have occurred following abrupt discontinuance (convulsions, tremor, abdominal and muscle cramps, vomiting and sweating). Keep addiction-prone individuals under careful surveillance because of their predisposition to habituation and dependence. In pregnancy, lactation or women of childbearing age, weigh potential benefit against possible hazard.

**Precautions:** If combined with other psychotropics or anticonvulsants, consider carefully pharmacology of agents employed; drugs such as phenothiazines, narcotics, barbiturates, MAO inhibitors and other

antidepressants may potentiate its action. Usual precautions indicated in patients severely depressed, or with latent depression, or with suicidal tendencies. Observe usual precautions in impaired renal or hepatic function. Limit dosage to smallest effective amount in elderly and debilitated to preclude ataxia or oversedation.

**Side Effects:** Drowsiness, confusion, diplopia, hypotension, changes in libido, nausea, fatigue, depression, dysarthria, jaundice, skin rash, ataxia, constipation, headache, incontinence, changes in salivation, slurred speech, tremor, vertigo, urinary retention, blurred vision. Paradoxical reactions such as acute hyperexcited states, anxiety, hallucinations, increased muscle spasticity, insomnia, rage, sleep disturbances, stimulation have been reported; should these occur, discontinue drug. Isolated reports of neutropenia, jaundice; periodic blood counts and liver function tests advisable during long-term therapy.

**Dosage:** Individualize for maximum beneficial effect. **Adults:** Tension, anxiety and psychoneurotic states, 2 to 10 mg b.i.d. to q.i.d.; alcoholism, 10 mg t.i.d. or q.i.d. in first 24 hours, then 5 mg t.i.d. or q.i.d. as needed; adjunctively in skeletal muscle spasm, 2 to 10 mg t.i.d. or q.i.d.; adjunctively in convulsive disorders, 2 to 10 mg b.i.d. to q.i.d. **Geriatric or debilitated patients:** 2 to 2½ mg, 1 or 2 times daily initially, increasing as needed and tolerated. (See Precautions.) **Children:** 1 to 2½ mg t.i.d. or q.i.d. initially, increasing as needed and tolerated (not for use under 6 months).

**Supplied:** Valium<sup>®</sup> (diazepam) Tablets, 2 mg, 5 mg and 10 mg; bottles of 100 and 500. All strengths also available in Tel-E-Dose<sup>™</sup> packages of 1000.

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